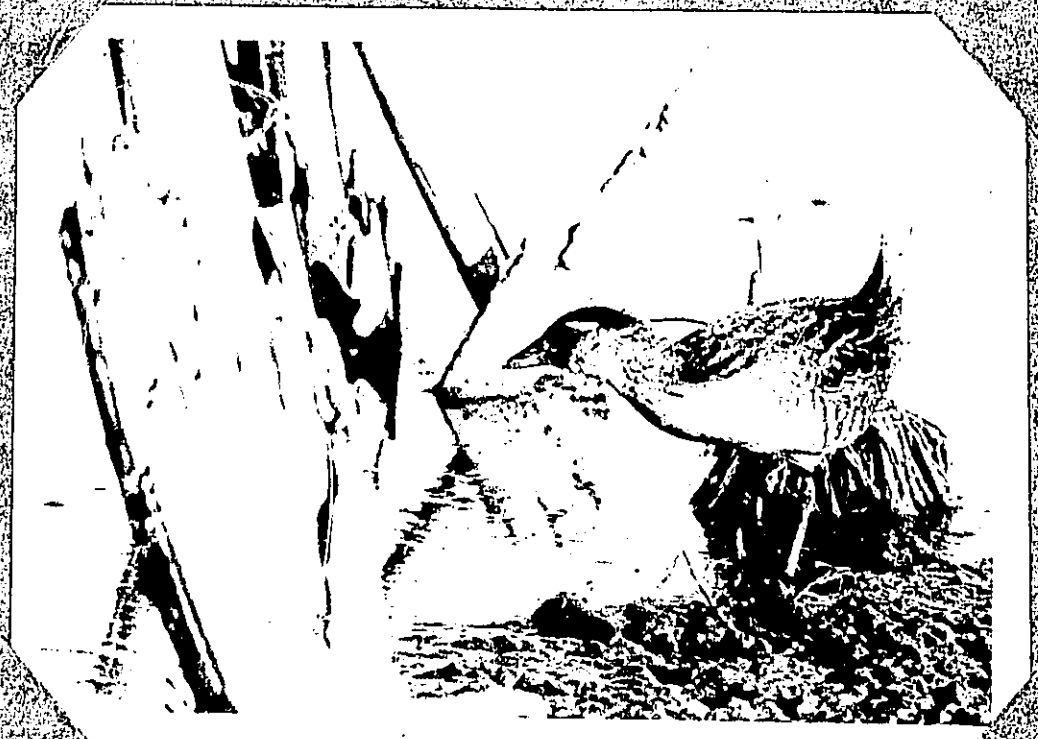
1967

AGASSIZ NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

1967



UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

MIDDLE RIVER, MINNESOTA

Refuge Manager, Agassiz National Wildlife Refuge
Middle River, Minnesota

April 17, 1968

In reply refer to: RF

Assistant Regional Supervisor, Division of Wildlife
Refuges, Minneapolis, Minnesota

Annual Narrative Report--1967

Your report has been reviewed by a number of people in the Regional Office and all agree that it is a quality report. The combined effort of you and your staff has once again resulted in a very good record of the year's activities.

It appears as if we need to know more about elevated nesting platforms. The poor success is somewhat disturbing.

One question: How come you guys are so unnaturally somber on the staff photo?

Congratulations on a very fine report.

James B. Monnie

JBMonnie:sp 4/17/68

Carpenter
Monnie
Morgan
Smith

Aultfather
Crozier
Dill
Duncan
Dundas
Hoffman
Johnston
Reilly
Rollings
Winship

AGASSIZ NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

1967

Permanent Personnel

Claude R. Alexander	.....	Refuge Manager
David R. Cline	.. 1/1 - 11/2	Assistant Refuge Manager
Jay R. Bellinger	.. 1/6 (EOD)	Ass't. Refuge Mgr. (trainee)
Marvin H. Lee	.....	Administrative Assistant
Oscar A. Christenson	.....	Maintenanceman
Lyle M. Blahauvietz	.....	Maintenanceman
Virgil D. Erickson	.....	Maintenanceman

Temporary Personnel

Orvin L. Sunsdahl	.....	Tractor Op. (LD)
Conrad O. Burrell	.....	Operator Gen. (LD)
Carl A. Burrell	.....	Tractor Op. (LD)
Robert G. Olson	.....	Laborer
Douglas Sanvik	.....	Wildlife Aid

UNITED STATES DEPARTMNENT OF THE INTERIOR

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MIDDLE RIVER, MINNESOTA

Left to right: Howard Lipke, Oscar Christenson, Claude Alexander, Lyle Blahauvietz, Jay Bellinger, Marvin Lee and Virgil Erickson

Heavens! These are uniformed personnel?
Name plates: Lipke on right pocket; [illegible] on left pocket; Blahauvietz & Lee [illegible]

[illegible] 5/3/78

C O N T E N T S

LIST OF PHOTOGRAPHS

Photograph Number	Subject
Ag. 470-4	Hoar-frost on Tree.
Ag. 504-14	Great-blue heron.
Ag. 492-8	Resident geese on the ice.
Ag. 545-14	Cormorant nesting platform.
Ag. 188-20A-	Great-horned owl on deer carcass.
Ag. 537-12	Fawn, white-tailed deer.
Ag. 566-26	Muskrat.
Ag. 481-13	Beaver.
Ag. 503-14	Skunk.
Ag. 546-38	Immature Red-tailed hawks.
Ag. 548-26	Immature broad-winged hawk.
Ag. 510-3	Great-horned owlets.
Ag. 561-37	Swallow migration.
Ag. 487-10	Black-capped chickadee.
Ag. 521-6	Black-crowned night heron.
Ag. 540-16	Moose.
Ag. 549-9	Narrow dike erosion.
Ag. 567-3	Waterfowl - feeding in farmfield.
Ag. 474-5	Brush dozing.
Ag. 564-6	Cage-trap.
Ag. 528-4	Wildlife observation.
Ag. 552-41	Display - Conservation education.

I. GENERAL

A. Weather Conditions:

TABLE I. Precipitation and Temperatures, 1967

Month	Precipitation			Temperature			
	Month	Normal*	Snowfall	Max.	Min.	Ave.	Normal*
January	1.22	.41	11.10	32	-33	3.0	-0.7
February	.43	.34	4.40	38	-40	-4.4	5.2
March	.77	.68	5.50	71	-30	18.8	19.7
April	4.30	2.05	5.00	62	0	34.8	37.3
May	1.21	2.66	2.00	85	11	47.0	51.6
June	3.38	3.77	-	86	34	60.8	62.2
July	.69	4.27	-	92	38	65.1	67.0
August	1.28	3.32	-	93	35	63.0	64.5
September	.80	2.78	-	85	20	56.0	53.8
October	.91	1.35	1.40	80	08	39.6	44.1
November	.73	.93	3.00	58	-08	24.3	24.8
December	1.16	.82	9.30	44	-40	11.0	8.9
Totals and Averages	16.88	23.38	41.70	93	-40	34.9	36.5

* Normal includes the ten year average, 1958-1967.

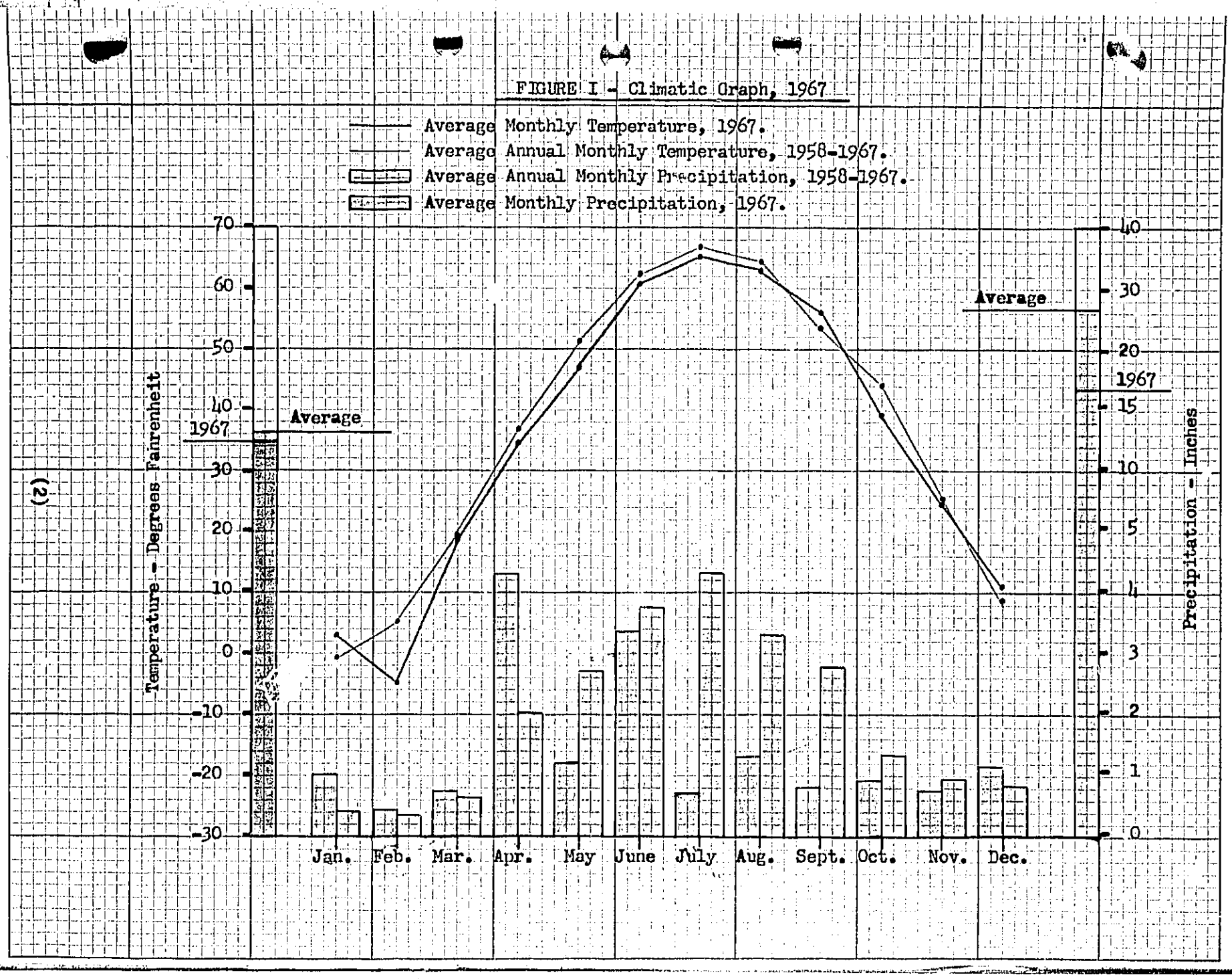
All weather data were obtained from the official weather station located at Agassiz headquarters.

Total precipitation for the year was 16.88 inches; 6.50 inches below normal. The first four months of the year precipitation was above normal and then fell below normal for the remaining months except December. The largest deviation from normal was during the month of July when we recorded .69 inches of precipitation which was 3.58 inches below normal. This lack of precipitation throughout the summer and fall months accounted for very dry conditions.

Total snowfall for the year was 41.7 inches.

Temperatures for the year were about average falling slightly below the yearly average by 1.6 degrees. On September 24 the first killing frost of the fall occurred. The last spring frost was recorded on May 20. Thus, we had a growing season of 127 days.

FIGURE I - Climatic Graph, 1967



B. Habitat Conditions:

1. Water

Warm temperatures reaching 71 degrees on the 30 of March left area farms bare of snow the following day. Little flooding occurred from this rapid runoff. However, a five inch snowfall on April 7 followed by 3.3 inches of precipitation during the last week of April and first week of May flooded many of the preferred terrestrial nesting areas. Although not as severe as in previous years, these floodwaters caused some damage to impoundment dikes (See photo Ag. 549-9).

An approximate refuge total of 127,070 acre feet inflow and 126,238 acre feet outflow was recorded this year. The monthly outflow records again showed April, May and early June to be the period of greatest water volume.

Due to extremely dry conditions throughout the summer, all scheduled drawdowns were accomplished. However, also due to the lack of precipitation, pools not in drawdown dropped below approved levels.

The dry summer allowed an acceleration of ditching and land clearing on private lands in the refuge's watershed. As a result, larger volumes of water are expected next spring.

After the main period of waterfowl use, Agassiz Pool was dewatered for added holding capacity of spring floodwaters in 1968. Due to this drainage and the scheduled drawdown of several pools, the overwinter storage (1,781 acre feet), is 7,778 acre feet less than was carried over last winter.

2. Food and Cover

Moderate snow depths during the winter of 1966-67 did not appreciably restrict movements of moose and deer in their search for browse.

During the spring migration an abundance of food was available in flooded grain stubble fields on areas adjacent to the refuge. An unharvested refuge oat field was also heavily utilized by puddle ducks and Canada geese throughout the spring. Diving ducks and coots found a readily available food supply in the vast refuge areas inundated by spring flooding.

Flooded stands of emergent aquatics provided adequate cover for overwater nesters, for broods of all waterfowl species and for moulting adults.

The annual aquatic plant survey showed an ample supply of natural foods was available in most refuge impoundments. Of the nine pools surveyed, six showed increases in desirable aquatic plant communities. Narrow-leaved pondweed (Potamogeton pusilus), sago (Potamogeton pectinatus) and clasping-leaf pondweed (Potamogeton richardsonii) showed the most significant increases.

Dewatered areas in Green Stump, Headquarters, South, Madsen and Thief Bay Pools proved to be highly attractive to geese throughout late summer and early fall months. On October 13, approximately 3,000 blue and snow geese were counted on the dry areas in Green Stump Pool. An abundance of mudflats and shallow water areas in these dewatered pools also attracted thousands of shorebirds during their fall migration.

A total of 8,250 bushels of mixed small grains and corn were fed on seven refuge feeding sites during the August 2 to September 7 depredation period. For further details on this feeding refer to Section II, A-5: Waterfowl Depredation and Control.

Refuge farmfields were heavily utilized by ducks and geese during the fall migration (See photo Ag. 67-3). A total of 220 acres of swathed grain, 19 acres of standing corn and 62 acres of winter wheat and alfalfa green browse were available on refuge fields. In addition, quackgrass sprouts on 118 acres of summer fallow received considerable use by geese.

Much of the refuge moose and deer habitat is in a deteriorated state as the trees and shrubs continue to mature. In an effort to rejuvenate the habitat, areas of mature brush were bulldozed last winter. The resulting sprouts were heavily utilized by moose and deer. This winter additioned areas are being dozed. Plots of mature brush are left for cover in these dozed stands.

II. WILDLIFE

A. Migratory Birds:

1. Phenology of Spring Migration

A warm front accompanied by southerly winds resulted in the return of six Canada geese on March 27. Two days later the first duck species appeared on the refuge when 32 mallards, seven goldeneyes, two gadwalls and one pintail were sighted. In comparing the arrival dates of the various species, it was noted that 58 percent arrived earlier, 32 percent appeared during the same period and 10 percent later than were recorded in 1966 (Table II).

The first waterfowl census taken on April 7, showed a total of 6,350 ducks on the refuge. This total included 3,200 mallards, 1,550 goldeneyes, 710 pintails and 310 scaup.

On April 28 the spring population reached the peak of 19,150 ducks. However, when peak numbers for individual species were totalled a figure of 29,884 was derived. This figure represented a drop of 54.1 percent from the eight year average of 65,115.

Amoung the dabblers, pintails, mallards, and green-winged teal showed the greatest drop in numbers from 1966 with decreases of 82.4 percent, 75.7 percent and 72.5 percent, respectively. Blue-winged teal showed an increase of 51.6 percent over the 1966 population.

Redheads, with an increase of 27.7 percent, were the only divers to show an increase in peak population this year. Ring-necked, lesser scaup, and canvasbacks showed the most drastic decreases of 77.7 percent, 75.4 percent and 67.7 percent, respectively.

Movement of migratory ducks from the refuge began on the first week in May, with the exception of gadwalls, blue-winged teal, lesser scaup and ruddy ducks. However, by May 28 only the resident breeding population of approximately 7,668 ducks remained.

A peak population of 1,581 Canada geese was recorded on April 29. This figure represents an increase of 29.9 percent over the eight-year average. By May 21, all migrant birds had left the refuge with approximately 345 resident geese remaining on the area.

On April 11 the first whistling swans were recorded when a flock of 37 birds was sighted on Agassiz Pool. The arrival date was the same

TABLE II. Distribution of Arrival Dates for Various Species of Waterfowl, 1946-67. (Numbers represent the number of years first sightings were made).

Species	March				April						Total Yrs. Recorded
	12-16	17-21	22-26	27-31	1-5	6-10	11-15	16-20	21-25	26-30	
Canada goose	1	3	5*	6	3	2	1				21
Mallard	1	3	1	4*	9	3					21
Pintail		1	2	5*	6	4	3				21
Goldeneye			3	5*	2	6	2	3			21
Scaup			1	3*	1	7	4	3	2		21
Ring-necked				1	5*	5	4	5	1		21
Bufflehead				1	2	2*	8	5	3		21
Gadwall				3*	1	3	7	5	2		21
Baldpate				1	2	6	5*	6		1	21
Shoveler				2	4*	3	4	6		1	20
Canvasback					3	3	6*	5	2	1	20
Wood duck					1	5*	3	6	1	1	17
Black duck				1	4	3	2	5	3*		18
Green-winged teal				1	2*	3	7	4	2		19
Blue-winged teal				2	2*	3	5	8	1		21
Redhead				1		3	7*	5	4		20
Ruddy							1*	1	8*	6	16
Whistling swan				1		5	7*	4	3	1	21
Coot		1	3*	1	2	9	3	2			21

* Period sighted, 1967

as was recorded in 1966. This flock of 37 swans was the peak number observed during the spring migration.

Waterfowl use days this spring were approximately 60 percent below those recorded in 1966. The total waterfowl use days by season in 1967 and fluctuations from previous years is illustrated in Figure II. This total represents the combined use days for ducks, geese, swans and coots.

A pied-billed grebe sighted on April 30 was the first water and marsh bird to be sighted this spring. By the second week in March most other species in this group were present on the refuge.

2. Breeding Populations

The annual duck and coot breeding pair count was conducted on May 17 this year. Survey procedures followed those set forth in the station Wildlife Inventory Plan.

The results of this count again showed a decrease in total resident breeding pairs of ducks. The total population of 7,668 birds was 35.7 percent below the 11-year average of 11,922 (Table III). The dabbler population of 4,292 was 53.0 percent below the 11-year average while divers showed an increase of 17.2 percent.

Breeding populations of dabblers, divers and coots for the years 1958-67 are illustrated on Figure III.

The loss of adequate nesting habitat due to extensive flooding undoubtedly was partially responsible for this decrease in the breeding population. Also, corresponding decreases of peak populations for most species during the spring migration indicate that the available breeding stock was down from previous years.

An extensive ground search for Canada goose nests was conducted as described in the station Wildlife Inventory Plan. This survey showed a total breeding population of 122 geese on the area. This figure was 2.9 percent below the eleven year average of 125 birds.

3. Waterfowl Production

The duck production estimate is derived from a brood/pair index technique. The number of broods is determined by a two-count ground census which has proven to be the most reliable when compared to data obtained from accurate 12-count brood surveys.

FIGURE II

Total Seasonal Waterfowl Use-days, 1961-1967

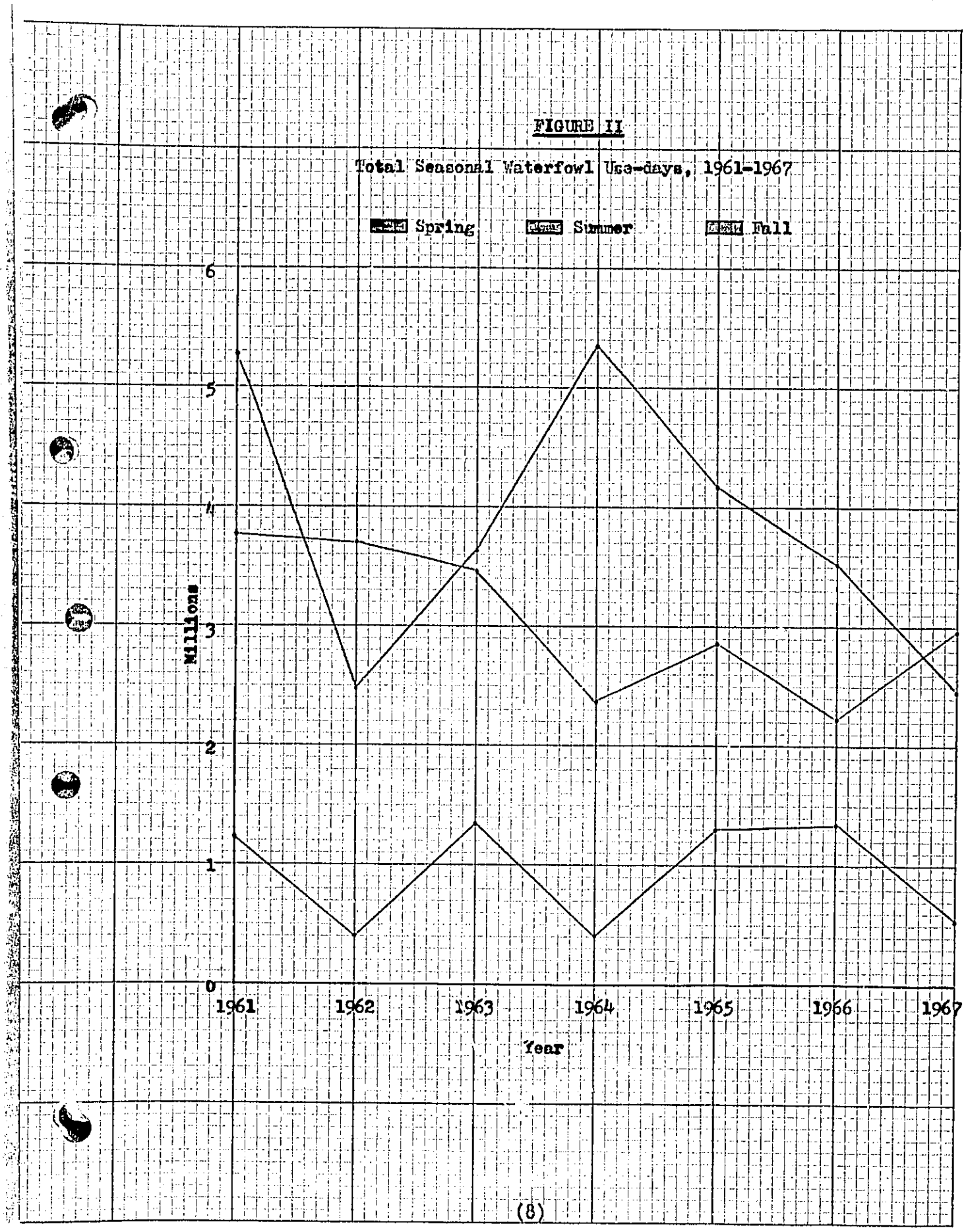
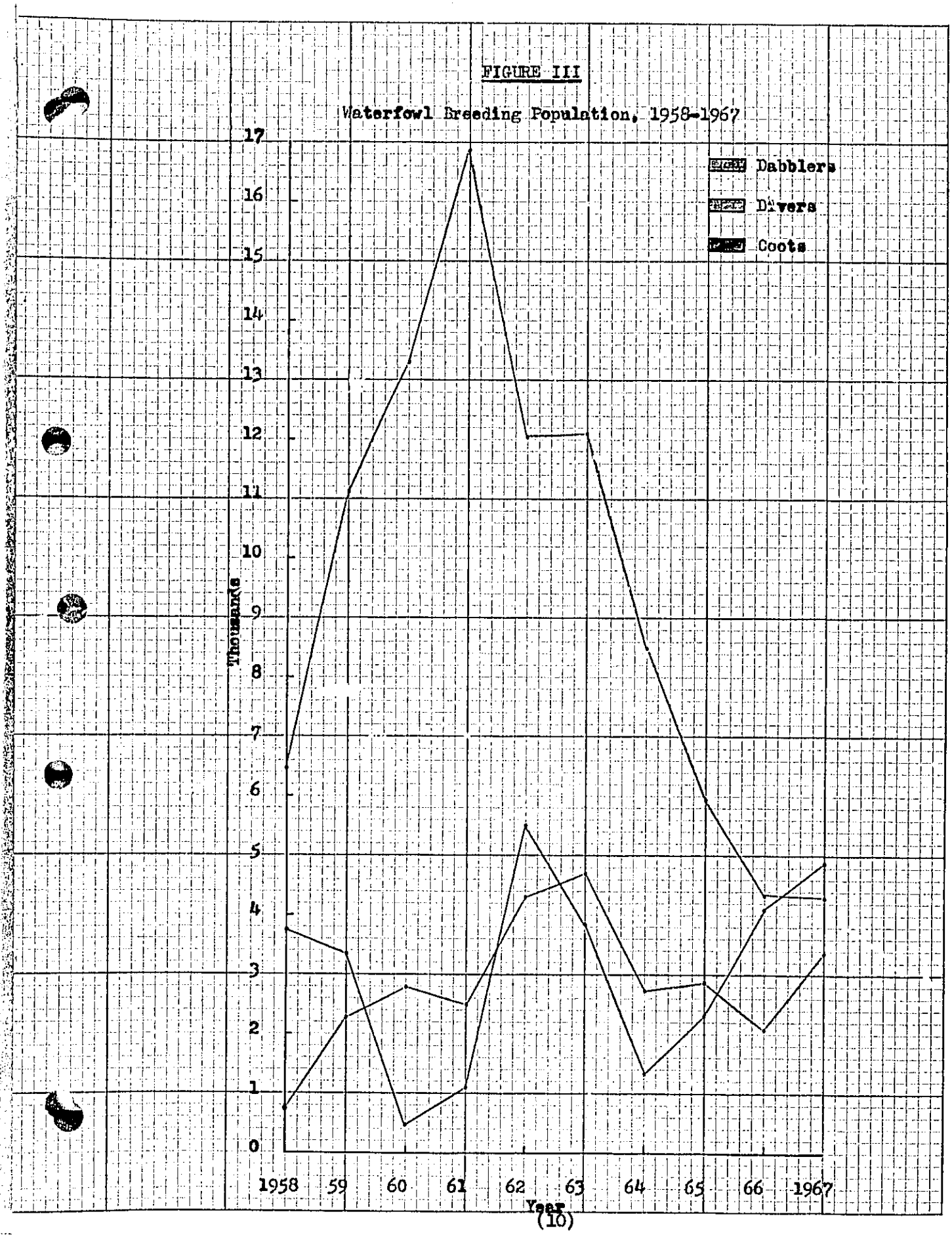


TABLE III. Waterfowl Breeding Populations, 1957-1967

Species	Average, 1957-67 Breeding Population	Average, 1957-67 Percent Species Composition	1967 Breeding Population	1967 Percent Species Composition	Percent Change From Average
Dabblers:					
Blue-winged teal	3,952	33.1	1,892	24.7	- 52.1
Mallard	2,347	19.6	924	12.1	- 60.5
Gadwall	1,576	13.2	1,186	15.5	- 24.7
Shoveler	548	4.6	76	1.0	- 86.1
Baldpate	330	2.8	72	.9	- 78.2
Pintail	183	1.5	8	.1	- 95.6
Green-winged teal	114	1.0	134	1.7	+ 14.9
Black duck	49	.4	0	.0	-100.0
Wood duck	32	.3	-	-	-
Sub-total	9,125	76.5	4,292	56.0	- 53.0
Divers:					
Redhead	1,064	8.9	1,244	16.2	+ 14.5
Lesser scaup	661	5.5	774	10.1	+ 14.6
Ring-necked	476	4.1	562	7.3	+ 15.3
Ruddy	386	3.2	580	7.6	+ 33.4
Canvasback	210	1.8	216	2.8	+ 2.8
Sub-total	2,797	23.5	3,376	44.0	+ 17.2
TOTAL DUCKS	11,922	100.0	7,668	100.0	- 35.7
Canada geese	125		122		- 2.4
Coots	2,869		4,874		+ 41.1

FIGURE III

Waterfowl Breeding Population, 1958-1967



(10)

Further details on survey techniques and production calculations are described in the station Wildlife Inventory Plan.

The two brood counts were taken on July 13 and August 16 this year. A total of 153 broods were recorded during these counts. When applying the brood/pair index, an estimated 2,220 broods were produced by 3,834 breeding pairs for a productivity rate of 57.9 percent. An average of six ducklings/brood at flight stage resulted in a total production figure of 13,320 ducklings produced in 1967 (Figure IV). This represents a decrease of 14 percent from 1966. Species composition of this total is represented in Table IV.

TABLE IV. Duck Production by Species, 1967

Species	Production at Flight Stage
Dabblers:	
Mallard	4,794
Blue-winged teal	3,516
Gadwall	1,866
Shoveler	134
Sub-total	10,310
Divers:	
Redhead	1,204
Ruddy	602
Canvasback	536
Ring-necked	400
Lesser scaup	268
Sub-total	3,010
TOTAL	13,320

An assumed increase rate of 2.8 per adult was applied to the total number of coots tallied during the breeding pair count. The resultant production of 8,773 birds represented a decrease of 22.9 percent from 1966. The total duck and coot production for the past ten years is illustrated on Figure IV.

A total of 61 breeding pairs of Canada geese produced approximately 122 goslings to flight stage in 1967. The overall hatching success was 56.6 percent. This represents a decrease of 34.1 percent from

FIGURE IV

Duck and Coot Production, 1958-1967

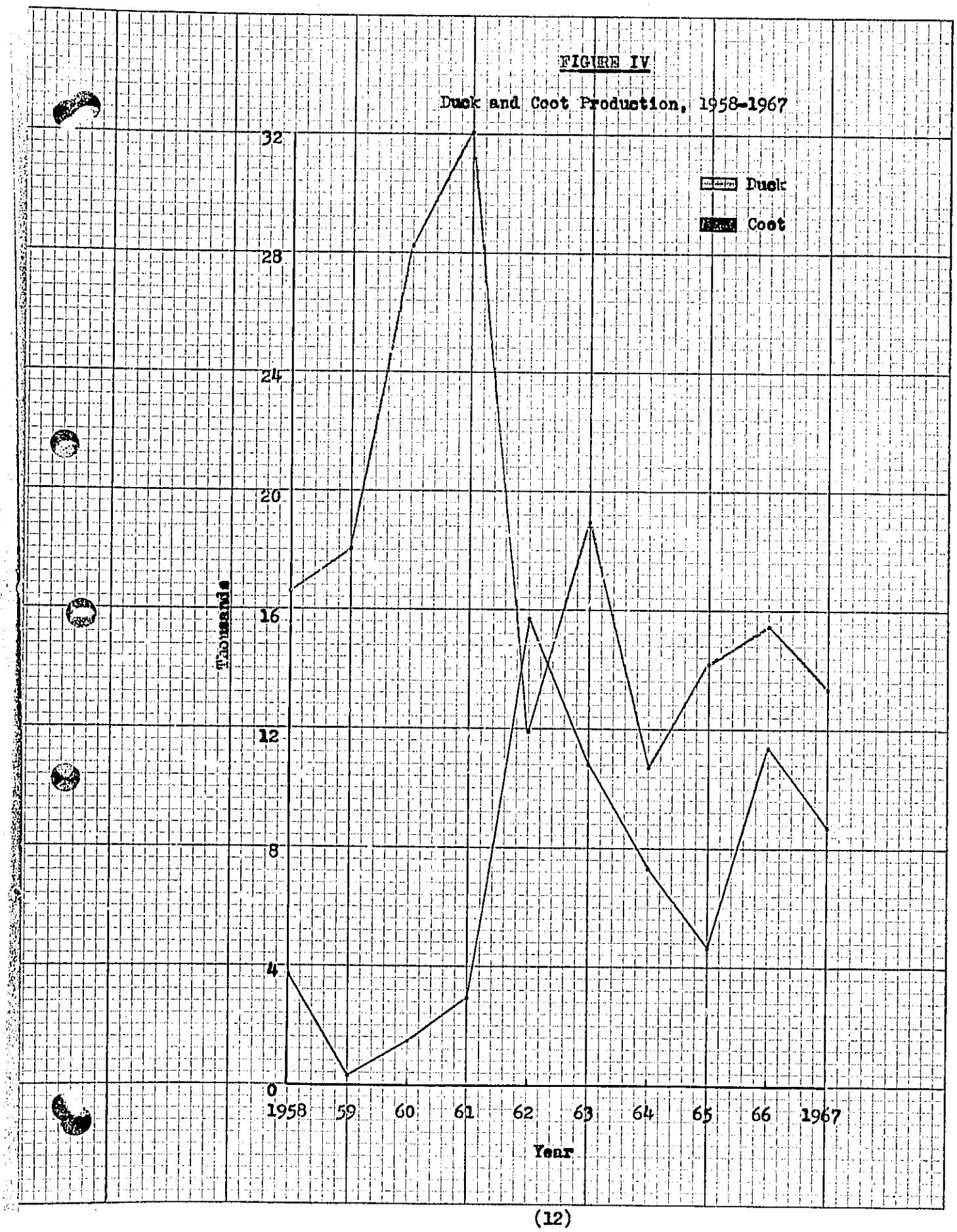
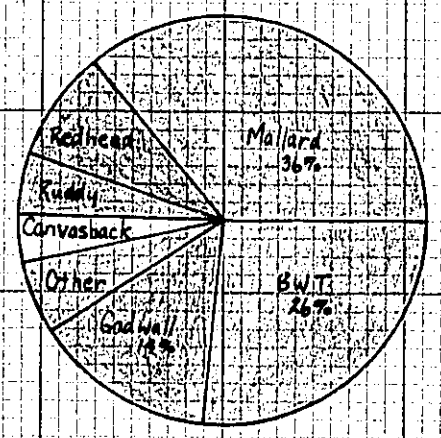
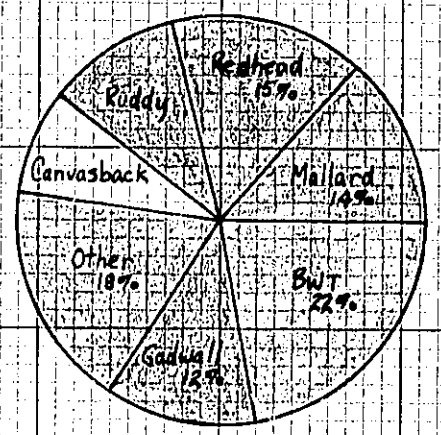


FIGURE V

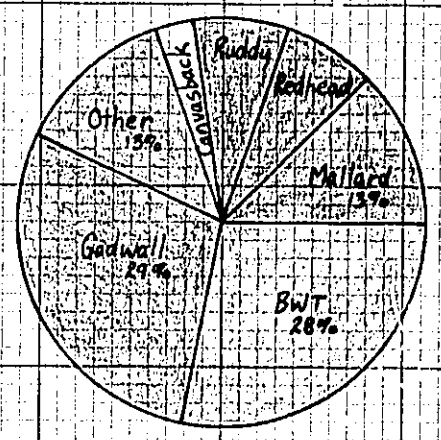
Species Composition of Ducks Produced, 1965-1967



1967
(13,320)



1966
(15,536)



1965
(14,181)

the 1966 success of 85.8 percent. Unseasonable cold days during the first week of May were thought to have influenced nest abondonment and the decrease in nesting success from 1966.

4. Phenology of Fall Migration

The first major increase in the late summer duck population occurred during the week of August 13 to 18. Duck populations increased from 20,988 to 43,346. The peak fall population of 70,450 birds was recorded on September 15, two weeks later than last year. This peak represented a decrease of 11.8 percent from the 79,795 ducks tallied in 1966 and a 9 percent decrease from the five year average.

Mallards and gadwalls represented the most abundant species during the period with peak populations of 25,000 and 30,500, respectively. The population steadily declined throughout the month of October until only 2,630 ducks remained on November 3. By the second week in November the fall migration was essentially complete.

On September 22 the first migrant Canada geese were sighted on the refuge. The same arrival date was noted in 1965 and 1966. A second influx of migrants arrived on September 29 when a total of 4,367 birds were recorded.

The peak population of 5,184 geese was recorded on October 6. The following week an increase in blue and snow geese was noted when approximately 3,000 were counted. This represented an increase of 80 percent over the peak population recorded in 1966.

By October 20 most transient geese had continued on their southward migration. Most of the resident flock departed from the refuge on November 1. However, approximately 150 birds remained until a one-inch snowfall forced them to seek a more favorable wintering area on November 22.

The first whistling swans arrived on September 29 when three adults were observed resting on Agassiz Pool. On October 27, the peak fall population of 250 was recorded. This represents a significant increase from the fall peak of 79 in 1966 and is the largest population recorded since 1959 when 1,020 were recorded. They remained on the refuge until the first week of November.

Transient sandhill cranes were sighted on September 2. The peak population of 666 birds was recorded on October 1. This total is more than double the population recorded in 1966.

The flock of white pelicans again visited the refuge this summer. The peak of approximately 406 was recorded, the last bird being sighted on October 13. This flock does not breed on the refuge, but uses the area as a feeding ground in late summer.

Hundred's of lesser yellowlegs arrived during the second week of July. Small numbers of pectoral sandpipers, dowitchers, marbled godwits, greater yellowlegs and common snipe were sighted on July 23. During the second week of August large numbers of greater yellowlegs, semi-palmated sandpipers, and Baird's sandpipers were noted, particularly on exposed flats of dewatered areas. Most of these species had continued on their southward migration by the first week of October. Lesser yellowlegs, however, were seen on the refuge as late as November 3.

5. Waterfowl Depredation and Control

Due to the unusually dry summer local grain swathing commenced during the first week of August. By September 1 the off-refuge harvest was essentially complete. The harvest was approximately 15 days earlier and one week shorter than the 1966 harvest season. Due to ideal harvest conditions and the refuge feeding program, crop depredations by ducks in 1967 were the lowest experienced in many years.

No complaints of duck depredations were received this year. Roseau River State Wildlife Management Area received several complaints of depredations by sandhill cranes, all of which were alleviated by exploders. Agassiz received two complaints of blackbird damage to sunflowers and canary seed and three of goose damage, one on newly-seeded bluegrass, one on swathed wheat and the other on swathed flax.

During the peak harvest period, grain was again fed on Agassiz, and on the Thief Lake and Roseau River state areas. The grain was placed on strategically located feeding sites in an effort to keep the ducks on the refuge areas. Agassiz fed 8,000 bushels of mixed oats, barley and some wheat on six feeding sites during the August 2 to September 6 period. To increase the attractiveness of feeding sites 250 bushels of corn were added to the other mixed grains. This seemed to be effective as the birds gleaned most of the corn from the sites before taking the other grain. A total of 19,050 bushels were fed to a peak population of 57,000 birds on the three areas in 1967 (Table V).

TABLE V. Summary of Depredation Feeding Program, 1967

Station	Feeding Period Start	Feeding Period End	Bushels Fed	Number of Feeding Sites	Peak No. Ducks Fed
Agassiz	Aug. 2	Sept. 6	8,250	6	17,000
Roseau R.	Aug. 3	Sept. 10	7,800	10	25,000
Thief Lake	Aug. 4	Sept. 15	3,000	3	15,000 &
TOTAL			19,050	19	57,000

In addition to the feeding sites 240 acres of swathed grain, 19 acres of standing corn and 44 acres of winter wheat were available to waterfowl on refuge fields during the 1967 harvest season. After the harvest on private lands was completed the refuge fields were harvested and a total of 7,200 bushels of grain put in storage for use on feeding sites in 1968.

The semi-annual meeting of the Minnesota Depredations Committee was held on December 6, 1967 in Thief River Falls, Minnesota. The progress of this committee is summed up in the following excerpts from the minutes of that meeting.

a. Public Hearing:
The Minnesota Outdoor Recreation Resources Commission recommended before proceeding with the expenditure of appropriated funds ($25,000 appropriated for the alleviation of depredations) the State Conservation Department hold a public hearing and at that time present the work program for use of funds. The hearing is scheduled for Janaury 23, 1968 at Roseau, Minnesota.

b. Work Program For Use of Funds:
Recommendations for the purchase of items which will enable each area to produce the necessary lure crops and grain for feeding stations include at Thief Lake $3,800 and at Roseau $10,000.

Area Game Manager Robert Farmes reported that needed equipment at Thief Lake is being purchased with state game funds and recommended that the appropriated funds be used to buy an 80 acre tract adjacent to the north end of Agassiz. The state would then grow grain on this tract to alleviate depredations on neighboring private lands.

The use of funds to harvest grains remaining on Thief Lake and Roseau areas after the depredations period. This grain would

then be used on feeding sites in subsequent years.

The committee recommended the purchase of six exploders for demonstration purposes.

c. Insurance Sub-committee Report:
Mr. Farmes read a letter wherein Brainard reported the recommendation that the FDIC offer insurance on depredations in high-risk areas was being considered by their Washington planning section. Another sub-committee meeting will be called when further information is available.

d. Lure Crops:
A report from Extension Agent Dorsey stated that early-maturing grain variety recommendations had not been received from the Extension Agronomists as of December 1.

e. ACP Practice:
A special ACP practice for controlling waterfowl depredations in eastern Marshall County was made available in 1967. Under this practice, cooperators received $13.00/acre for food plots planted for waterfowl. The farmer is allowed on 10 acre plot for every 160 acres of farmland he has in crops. Mr. Farmes reported four contracts were completed in 1967. He suggested more farmers would participate if the payments were increased. The committee recommended the practice be continued in 1968 as a pilot project in Marshall County only.

The next semi-annual, Minnesota Waterfowl Depredations Committee meeging was set for June 5, 1968.

B. Upland Game Birds:

1. Ruffed Grouse

Good snow roosting conditions last winter resulted in an adequate carry-over of breeders in 1967. Weather conditions during the breeding season were generally favorable and it was felt that a successful hatch would result.

This was substantiated by the increased number of sightings throughout the season. A total of 62 birds were observed during 1967 as compared to 24 in 1966 and 14 in 1965. The 1967 hunting season on surrounding areas also showed increased populations as hunter success was higher than had been experienced in several years.

A count of drumming males was conducted on May 16. However, due to weather conditions and a heavy spring work schedule only one of the two transects was completed with a total of 15 grouse recorded.

2. Sharp-tailed Grouse

A slight increase was again noted in sharp-tails this year. Although the total refuge population is not known, 22 birds were sighted this year. Groups of 20 to 50 birds were sighted prior to the hunting season on areas adjacent to the east and south refuge boundaries.

3. Other Upland Birds

No ring-necked pheasants, woodcock, pinnated grouse or spruce grouse were sighted on the refuge this year. Seven grey partridge were observed this fall. This species was last seen on the refuge in 1964.

C. Big Game Animals:

1. White-tailed Deer

The annual big game census for 1967 was conducted on February 27. Weather conditions during the census were generally good, however, clear skies caused ground shadows which affected the count somewhat.

The results of this year's survey showed a 17.5 percent increase in the deer herd from 1966 (Table VI). Of the 806 animals recorded, 62.3 percent were sighted on the refuge with the rest

TABLE VI. Moose and Deer Populations Figures 1960 - 1967 (Percent Change From Previous Year is in Parenthesis)

	Deer				Moose			
Year	State	Refuge	Total		State	Refuge	Total	
1960	298	620	918	(+48.1)	54	74	128	(+48.8)
1961	272	690	962	(+ 4.8)	26	104	130	(+ 1.6)
1962	152	380	532	(-44.7)	66	68	134	(+ 3.1)
1963	126	394	520	(- 2.3)	56	80	136	(+ 1.5)
1964	130	392	522	(+ .4)	40	100	140	(+ 2.9)
1965	140	484	624	(+19.5)	16	112	128	(- 9.3)
1966	184	502	686	(+ 9.9)	38	150	188	(+46.9)
1967	304	502	806	(+17.5)	54	130	184	(- 2.2)

counted on the three adjacent state wildlife managment areas. The stocking rate of 14 deer per square mile of available refuge winter habitat was found both in 1967 and 1966.

As in most areas having open timber stands interspersed with areas of brush, the refuge deer herd shows little if any tendancy to yard. However, in 1967 snowmobile activity on adjacent lands forced deer to bunch up on areas near refuge boundaries where they had not been recorded in previous years. This hazing of big game animals by snowmobiles may become a serious problem for northern states in the years ahead.

Little winter mortality was noted this year. However, as is the case with most northern deer herds, a few animals did not make it through the long winter months. (See photo Ag. 488-20).

2. Moose

The February census revealed a slight decrease in the total moose population from 1966. Of the 184 animals recorded 71 percent were sighted on the refuge and the remainder on the three adjacent state areas. The refuge population results in a stocking rate of 3.5 moose per square mile of available habitat.

An early winter census was conducted December 19, 1967. The count was intended to obtain accurate sex and age ratios for the refuge population. However, the census date was found to be too late for positive sex determination as bulls with one antler and

and others with only white spots (where antlers were attached) were observed. This is substantiated by the high ratio of adult cows (94) to bulls (46).

The count of calves was considered accurate for production estimates. Forty-two were recorded for a production rate of 23.1 percent. This is slightly higher than the 20.2 percent rate found in 1966. Since hunting and predation are non-existent the habitat must be the main factor limiting herd expansion.

Although the northern portion of Minnesota maintains a huntable moose population, the state legislature did not authorize a moose season in 1967.

3. Elk

Due to lack of time, the elk herd northeast of the refuge was not censused in 1967. State personnel reported counting eight animals and received an unverified report of twelve additional animals for a total population of twenty. This represents a slight increase over the seventeen animals counted in 1966. Poaching and shooting by farmers when animals destroy haystacks seem to be the main factors limiting the expansion of the herd.

4. Black Bear

No black bear were sighted on the refuge this year. During the deer season tracks of a sow and cub were seen on the exposed mudflats of Webster Pool and tracks of a lone bear were observed in a dry ditch near refuge farmfields. Five bear were killed during the deer season along the Moose River, 10 miles east of the refuge.

D. Fur Animals, Predators, Rodents, and Other Mammals:

1. Muskrats

The pre-season census of the refuge muskrat population was conducted on October 20 in accordance with techniques set forth in the Wildlife Inventory Plan. The survey revealed a total population of 1,993 animals which represents a drop of 70 percent from 1966. The decline can again be attributed to; winter-kill in 1966-67, poor production due to spring flooding, and limited areas of adequate depth in the fall.

Dahl and Northwest Pools contined to be the areas of highest concentration. These pools experience the least fluctuation in water levels during the breeding season and were not affected by the fall dewatering of Agassiz Pool.

2. Beaver

This mammal continued to maintain a high population level on the refuge this year. A total of 49 animals were removed by two trappers during April. Although beneficial in the more remote refuge areas, beaver can be a nuisance when they move into the pools and cdntinually plug the control structures. Dry conditions caused a large number of animals to move into the refuge this summer as the fall count of 25 active lodges indicates. The harvest of approximately 50 animals from critical areas is planned for the 1968 trapping season.

3. Mink

General observations throughout the pre-season period indicated that the refuge population was high enough to warrant a substantial harvest during the fall trapping season.

During the aquatic plant survey, assistant manager Bellinger and wildlife aid Sanvik observed a young mink trying to kill an adult moulting mallard. The mallard was flapping around in the shallow water with the tenacious little mink clinging to its head. When approached by the observers the mink maintained its hold until a canoe paddle was forced between them. Upon being separated neither the mallard nor the mink seemed injured from their brief encounter as they hastily departed in opposite directions.

4. Red and Grey Fox

No grey fox were sighted, however, red fox were regularly observed on the refuge throughout the year. Due to the increased pressure

of snowmobile hunters on private lands the refuge population experienced a noticeable increase during the winter months.

5. Coyotes

The refuge population of these carnivores seemed to remain about the same as in 1966. Three sightings of coyotes were recorded during the past summer. On two occasions this fall refuge personnel heard the howling of family groups in the northern portion of the refuge.

A refuge permittee trapper caught a 28½ pound male coyote in a mink trap set near the Webster Pool control. Since he could not free the animal and was afraid it would escape with the trap, he shot the coyote. The skin is now being tanned and will be used for display purposes by the refuge.

6. Timber Wolf

Two confirmed sightings of wolves were recorded in 1967. On July 6 a large timber wolf was sighted by one of the refuge maintenancemen as it ran in front of his vehicle 1½ miles east of headquarters. The wolf was approached to within 100 yards before it left the road. In November a refuge trapping permittee sighted a large, light-colored wolf on the ice of Webster Pool.

On October 29 Mr. Wallace Sparby of Thief River Falls shot a 71 pound female wolf approximately six miles east of the refuge.

It is though that at least one resident timber wolf is on the refuge at this time.

7. Bobcat and Lynx

No bobcats or lynx have been sighted on the refuge this year. Tracks indicate, however, that at least two bobcats reside on the area.

8. Skunk and Raccoon

General observations indicated no drastic changes from the past two years. Refer to Section V (Field Investigations & App. Research) under predator control for further details on these animals.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies:

1. Hawks

The arrival of two marsh hawks on April 18 marked the start of the spring hawk migration in 1967. They were followed, in order of arrival, by red-tailed, sharp-shinned, rough-legged, duck, broad-winged, and Cooper's hawks.

Two duck hawks remained on the area until June. During this time, Franklin's gulls seemed to be the preferred prey as their habit of sitting in large groups on the dike tops made them more vulnerable than other birds species.

On September 8 a marsh hawk was seen harassing a flock of widgeon. Upon closer observation, the hawk seemed to pay no attention to the 100+ widgeon but was concentrating on a group of ten pintails. The hawk would hover about one foot above the birds with his legs out-stretched. The pintails would flap wildly and dive but did not attempt to fly. After ten minutes the hawk gave up and flew off.

The peak fall migration occurred during the first week of September. Sixteen hawks were sighted in one day during this period. By the second week in October the migration through the area was essentially complete.

2. Eagles

At least two golden eagles frequented the refuge last winter. During the spring months three immature bald eagles were sighted. On November 3, assistant managers Cline and Bellinger observed a golden eagle killing a Canada goose on the ice of Agassiz Pool. Although the goose appeared to be a large one and put up quite a struggle the eagle was able to hold it down. The large raptor soon began to pluck feathers from the bird's back at the base of its neck. After plucking all the feathers from this area, the eagle began tearing flesh from the base of the wings and neck. This continued for about 30 minutes before the goose finally died. An immature golden eagle watched these proceedings for a time but did not approach the adult bird. An adult bald eagle also flew in to watch, but stood on the ice about 50 feet away.

3. Owls

Six sightings of snowy owls were recorded in 1967. Although it is an uncommon winter visitor from more northern areas, one snowy owl

was sighted on the refuge as late as April 21. On May 5 a great horned owl nest containing three owlets was located (See photo Ag. 510-3). This species is a common refuge resident throughout the year.

On April 23, the first short-eared owl of the spring was sighted. This species is common on the refuge during the summer and early fall months. A southward movement of these owls was noted on October 10 with the last individuals sighted on December 6.

4. Crows, Ravens and Magpies

On March 12 the first migrant crows were observed with the high of 48 recorded on April 7. The summer population was lower than in previous years.

Ravens, a common winter resident, were frequently sighted.

Another common winter resident is the magpie. The first migrants were sighted on September 22. A peak number of 76 birds was observed on October 20. However, by the following week, some of these birds departed and the winter population stabilized at approximately 30.

F. Other Birds:

Black-capped chickadees were again the most common winter residents (See photo Ag. 487-10). Hairy and downy woodpeckers, redpolls and snow buntings were also frequently sighted throughout the winter months. Refuge bird feeders also attracted such species as evening and pine grosbeaks, Bohemian waxwings and red cross-bills.

As in previous years, horned larks were the first spring migrants to appear. On February 26 a flock was sighted along state aid Highway #7. This arrival date was the same as was recorded in 1966 and was one day later than in 1965. Other passerines began to appear during the week of March 23. On April 22 a mass movement of fox sparrows, robins, and yellow-shafted flickers was noted. The first warblers were sighted April 25. During the week of May 7-13 a major movement of myrtle and palm warblers was recorded. In general, the arrival dates and periods of major migration for most species of passerines closely matched those recorded in 1966.

Of the 242 species of birds recorded on the refuge bird list, 31 species of passerines are listed as summer residents. Of these, house wrens, cliff and barn swallows, cedar waxwings, purple martins, robins, song sparrows and yellow warblers were observed nesting in the headquarters area.

The most spectacular event of the fall migration was again the mass buildup of tree and cliff swallows at refuge headquarters. On July 7, the first evidence of the annual buildup was observed on the power lines at headquarters. By July 12, hundreds of these birds were in the area (See photo Ag. 561-37). A mass migration of harris sparrows through the refuge was noted on October 4. Shortly after this date the fall migration was essentially complete.

G. Fish

The first spring spawning run was noted on April 11 when several northern pike were observed in the ditch below Green Stump Pool control. On May 17, spawning suckers were sighted on several flooded spillways. Vast numbers of fathead and shinner minnows were observed in late May and throughout June in the ditch below Green Stump control. This concentration of food drew a large number of herons and other fish eating birds (See photo Ag. 521-6).

Due to the lack of favorable water conditions no rescue operations by state fisheries personnel were conducted this year. In 1964, approximately 7,000 yearling northern pike were salvaged from refuge waters.

This year 40 sheepshead and 2 dogfish were salvaged by refuge personnel from a drying pool in ditch #11 and released in Agassiz Pool.

H. Reptiles and Amphibians

Garter snakes were sighted throughout the summer period. During the last week of September and first week in October many of these snakes were sighted on refuge roads and trails. The red-bellied snake is the only other species known to frequent the area.

A large snapping turtle, estimated to weigh 20 pounds or more, was found crossing State Aid Highway #7. Very few turtles are sighted on the refuge due to the shallow impoundments and resulting deep frost penetration in this area.

A fall migration of tiger salamanders was noted again this year as they crossed refuge roads during their trek from marshes to upland wintering areas.

I. Disease

On June 25 a yearling cow moose was found in a paralyzed condition along a refuge road (See photo Ag. 540-16). An autopsy revealed that the body cavity was completely filled with a yellow fluid and the cause of death was probably due to rupture of an internal organ.

A two year old bull moose was found floating in a borrow pit along State Aid Highway #7 on September 15. Due to the decayed condition of the carcass, the cause of death was undetermined.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development and Maintenance:

Worthy of special comment under this heading is the completion of Agassiz's Master Plan announcement. The accomplishment thereof marked the end of approximately four years of work which involved personnel from several Divisions of our Bureau. Individuals connected therewith are too numerous for special recognition here; however, Staff Specialist, Edward Crozier who unrelentlessly pursued the job, which at times seemed impossible, to satisfactory completion is deserving of special mention. We admire and respect Ed for a job well done. Although we have not seen the finished product, we know it will be outstanding.

1. Water Facilities (dikes, ditches, spillways)

Approximately 15,00 cu. yds. of new fill were placed, shaped and leveled in the re-construction of Madsen dike.

A wave and high water eroded section of Agassiz pool dike was repaired with about 800 cu. yds. of clay-gravel fill, and 70 yards of field rock placed as rip-rap for future protection.

Proper function of six ditches and river channels were maintained by frequent removal of beaver deposits and other debris by use of our 3/4 cu. yd. dragline and dynamite. The D-4 tractor was used efficiently to "snake" beaver cut trees from approximately one mile of Thief River.

New fill was shaped and leveled along about 1.5 miles of the dike common to Ditch #11 and Dahl Pool.

Three culvert water-drops from agricultural unit A-6 were rip-rapped. Lost River diversion ditch spoil bank was shaped and leveled for use as an access to the south boundary.

2. Water Control Structures

A new twin radial gate control structure was installed in Ditch #11 outlet from Agassiz Pool. The structure contains a three foot circular slide gate in addition to the two 9 x 14 ft. radial gates. Total discharge capacity, in square feet, is 259 as compared to only 16 for the one replaced. Hurley Construction Co., St. Paul, Minnesota was the contractor for the job which included the Madsen dike work mentioned above. Refuge personnel assisted our Engineering Division with routine inspection duties.

All structures, greatly overtaxed by increased water volume brought on by a continually expanding drainage program, received regular repair and maintenance. The work involved about 60 man-days on stoplog replacement, placing 180 yards of new fill and 20 yards of rip-rap in washouts, plugging leaks, manipulations and routine attendance.

3. Roads and Trails

Approximately 35 miles of refuge primary roads and trails received maintenance including grading, shaping, blading, and new gravel in depleted stretches. The excellent conditions achieved must partially be attributed to favorable weather. Snow removal was carried out as necessary for winter work achievement. Dry road and trail shoulder conditions facilitated mowing. Approximately 50 miles of roads and trails were mowed with combination rotary and sickle equipment. Excellent results were achieved in mechanical weed and brush control.

Four new "swimg" gates were completed to finish refuge gate rehabilitation started last year.

4. Miscellaneous Refuge Facilities

Favorable working conditions aided greatly in the rehabilitation of approximately 4.5 miles of grazing unit fences.

About five miles of boundary scarcely discernible from brush and tree growth were cleared with the D-8 dozer. Re-posting work was completed on about 20 miles of refuge boundary.

Fourteen new stock ponds were machine constructed in grazing units and three others improved by leveling spoil and graveling approaches.

On cooperative job on replacement of a Moylan Township culvert was completed principally for the benefit of hunter access. One new culvert was installed to facilitate cattle access to a grazing unit.

5. Equipment

The refuge's "one year older" light and heavy equipment required and received repairs and maintenance necessary for safe, dependable service. Repairs included the usual, from motor overhauls to crawler tractor track repairs, and all were performed by personnel in refuge shops.

Replacement items received were limited to a surplus Grand Forks AFB low-boy trailer. Two of these 25-ton units were also obtained for Rice Lake and Sherburne.

6. Buildings

Repair and maintenance to our near thirty year old buildings increases annually. This year's principal jobs consisted of floor refinishing, interior and exterior painting, new overhead garage doors, a new partition and heating system for the welding shop, installation of new windows, doors and some frames, electrical facilities replacement and expansion, plumbing repairs and replacements, and a multitude of minor upkeep jobs.

B. Plantings:

1. Aquatic and Marsh Plants

No plantings made in 1967.

2. Trees and Shrubs

No plantings made in 1967.

3. Upland Herbaceous Plants

No plantings made in 1967.

4. Cultivated Crops

Refuge farming activities were favored by the most suitable weather conditions experienced in four years. Ironically, wet conditions which had been our major, annual, weather worry were replaced with concern for dry climatic factors. With the exception of localized heavy rain shortly after crop seeding, favorable weather was credited with good crop growth and harvest.

Refuge plantings under this heading for 1967 included the following: 119 acres of Garland oats, 80 acres of Larker barley, 44 acres of Minter winter wheat (green forage) 19 acres KC35, Agsco (80 day) corn, 11 acres of Vernal alfalfa, and 7 acres of Ranger alfalfa. One farming permittee participated in the refuge farm program. The refuge's share of his operation was 21 acres of Rodney oats.

A total of 220 acres of small grain (oats and barley) was harvested. It was swathed, left in swaths during the normal depredation period, and then custom combined. The yield of approximately 7,200 bushels are stored in refuge facilities ready for depredation alleviation in 1968. The winter wheat seeded in late August was heavily utilized by Canadas, snow and blue geese, sandhill cranes and deer during the

fall period, possibly beyond the point of recovery and winter survival. Corn developed full ear growth, but matured only to the "feed stage". It was left standing and was completely utilized. We are wintering several corn fed coons and deer, but geese, principally Canadas, got the "hog's share". Alfalfa was seeded experimentally for nesting habitat improvement, green forage and soil improvement. The plantings are part of the crop rotation system in effect on the refuge agricultural units.

Close to 500 acres, including that under cooperative agreement, are ready for crops in 1968. The refuge staff has prepared about 380 acres by fallowing and fall plowing, while our single permittee has readied 120 acres.

C. Collections and Receipts

1. Seed and Other Propugules

One hundred bushels of high quality winter wheat were received from DeSoto Refuge and used for seeding green forage crops at Agassiz.

All other grain collected or received was for feeding purposes in connection with banding and depredation control. Refuge harvested grains are reported above. In addition, 175 bushels of corn were transferred from DeSoto, 750 bushels of corn from Tewaukon and 780 bushels of barley from Arrowwood Refuge's permittee near Hope, North Dakota. The quality of both the corn and barley was excellent and of sufficient quantity to enable the depredation control feeding program to function without Surplus Commodity Corporation grain. For the first time since 1963 the 5,000 bushels of "Government" grain made available to us by the Management and Enforcement Division was rejected.

2. Specimens

Three immature whistling swans, illegally killed near Thief Lake Wildlife Management Area, were turned over to the refuge by local game wardens for holding and subsequent transfor to scientific or educational institutions. They are frozen and awaiting disposition.

Two sandhill cranes are also preserved in our deep freeze for further handling. One was seized by Assistant Manager, Bellinger, in the apprehension and conviction of the violator. The other, apparently shot by hunters, was found dead by Administrative Assistant, Lee, southeast of the refuge.

We are still considering the possibility of having one of each mounted for local public information use in hopes of decreasing future illegal kills.

W. Patrick Carney, Ph.D., Res. Assoc. Biol., Minot State College, collected the following mammals from Agassiz Refuge in August while examining mammals in Minnesota for the presence of the tapeworm (Echinococcus multilocularis).

(3) Zapus hudsonius - meadow jumping mouse.
(3) Sorex articus - artic shrew.
(32) Microtus pennsylvanicus - meadow vole.
(1) Peromyscus maniculatus - deer mouse.

None of the Agassiz mammals were infected, but Dr. Carney reported he had found a positive focus a few miles east of Angus, Minnesota.

In compliance with a request from Northern Prairie Wildlife Research Center, Jamestown, North Dakota, Agassiz collected 82 gadwall and 16 mallard eggs for use in an experimental release program being conducted by Arrowwood Refuge. The eggs were taken from wild nests and transferred by Glenn Sherwood on June 30, to the Research Center for incubation, hatching and starting. They were to be moved to Arrowwood Refuge when 3-5 days old for continuance of the imprinting study.

D. Control of Vegetation

Chemical control of weeds is summarized on NR-12.

The use of Amitrol-T four years ago in experimental cattail control is still in evidence. Observation this year showed little regrowth of cattail on the treated areas, however, lush growth of desirable submerged aquatic plants was noted. Even though this herbicide effectively controlled cattail its undesirable effects on marsh fauna leaves much to be desired. We're thankful this chemical and others are now prohibited from wildlife refuge use. Major efforts for vegetative control will be directed towards biological and mechanical methods.

Snow covering and ground frost conditions were ideal for winter brush control. Approximately 300 acres of over mature willow, tag-alder, aspen and other undesirable brush were cleared with the refuge D-8 with dozer blade.

In addition to farm land development and seed bed preparation, refuge fallowing, and fall plowing and disking operations are effective means

of weed control in farm units. As mentioned above, the approximate 500 acres received weed control benefits from our land use practices.

E. Planned Burning

Farmfields, A-3, 4 and 5 were reclaimed after several years of wet condtions. Accumulated vegetation was removed by burning to facilitate plowing and disking. On April 4-6 approximately 615 acres were cleaned.

We are annually faced with the problem of finding suitable conditions for effective controlled burning. Spring conditions this report year were too wet for effective habitat improvement by burning. Fall conditions were too dry. Any attempt at controlled burning during the period when desired results were possible would have probably ended in wild fires. The tinder dry vegetation, ow humidity, high temperatures and strong winds of September and October prevented application of planned burning. Advantage was taken of late fall conditions, November 20, to burn portions of Madsen Pool which was in unscheduled drawdown. Although conditions were not conducive to excellent burning, satisfactory results were obtained in removal of brush and tree piles, that remained from past clearing operations. Approximately 200 acres of accumulated marsh vegetation were burned.

F. Fires

Maybe we were afraid to burn, but not our neighbors in all directions. Many apparently decided to burn anything burnable without regard for danger. Personnel felt at times as if they were "sitting on the powder keg" and that refuge wild fires were inevitable. Precautions and preparations were made including a new, permanent fire break around headquarters. However, no fires burned into the refuge. We indeed felt lucky and still are thankful.

Many peat fires were started and some are still burning at this writing, January 23. Local fire departments were kept busy during September and October protecting personal property, and sometimes were called by the individual who started the fire. Peat smoke polluted air was common and at times posed serious hazards to motorists. Several car accidents and two highway deaths were attributed to poor visibility.

IV. RESOURCE MANAGEMENT

A. Grazing

Ten permittees grazed cattle on the refuge during the period of May 1 through October 31 this year. A total of 913 cattle were grazed on 17 units. These units contain approximately 4,900 acres, however, some of this acreage is brushland and is not utilized by cattle.

A total of 2,605.61 AUM's were utilized. At the rate of $1.00/AUM, the revenue received from grazing amounted to $2,605.61.

Four and one-half miles of new fence were constructed around grazing units G-15 and G-5. Fourteen new stock ponds were completed in grazing units G-5, G-5a, G-11, and G-7. It is hoped that, by leveling the spoil and fencing these ponds, some use by nesting waterfowl will result.

Five permittees exceeded their allowed AUM's. On most of these units the AUM's utilized did not greatly exceed those allowed. One permittee, however, exceeded the prescribed use by 65 percent. After checking this unit, it was decided that a later turn-in date of June 1 would be necessary in 1968 to maintain suitable nesting habitat on the area.

B. Haying

Under a Cooperative Farming Agreement, Mr. Juliam Rodahl harvested 233 tons of tame hay from 165 acres of refuge land this year. In return, the permittee plowed and disked 100 acres of hayland, summer fallowed 35 acres and planted 21 acres of oats for the refuge.

C. Fur Harvest

The 1967 trapping season ran from November 4 to December 3 on mink and from November 4 to December 31 on all other furbearers except beaver. The beaver season extended from March 3 through April 30.

During this year the two trapping permittees harvested a total of 226 animals for a cash return of $1,899.50. The refuge share of this total came to $787.12 (Table VII).

The low muskrat population and low pelt value ($.40) resulted in only 42 of the recommended 1,495 rats being harvested this year.

TABLE VII. Summary of Fur Harvest Returns, 1967

Furbearer	No. Animals Taken	Ave. Price Per Pelt	Total Return	Refuge Share
Muskrat	42	$ .44	$ 18.50	$ 4.62
Beaver	49	$ 6.00	$ 294.00	$ -
Mink	122	$12.83	$1,565.00	$782.50
Fox	5	$ 2.80	$ 14.00	$ -
Raccoon	4	$ 1.50	$ 6.00	$ -
Coyote	1	$ -	$ -	$ -
Weasel	2	$ .50	$ 1.00	$ -
Badger	1	$ 1.00	$ 1.00	$ -
TOTALS	226		$1,899.50	$787.12

Excellent trapping conditions and high population levels resulted in the removal of 71 male and 51 female mink. Some of the males, being of highest quality, brough top prices of $26.00. Average pelt value was about $12.00.

No sharing or harvest restrictions were placed on fox, raccoon, weasel and skunk as their fur is of little value and they are well established waterfowl predators on the refuge. The trapper-take-all basis also applies to the refuge beaver harvest. Two permittees trapped 49 beaver, many of which were removed from nuisance areas. The low average price of $6.00 was attributed to the classification of the animals as dry-land beaver. Low water levels and lack of stored food forced the animals out from under the ice and resulted in the loss of guard hairs.

Because of their esthetic values and low refuge populations such species as black bear, timber wolf, coyote, bobcat, and lynx are not harvested. One coyote was accidently taken in a mink set this year. The pelt is being tanned and will be used for refuge display purposes.

D. Timber Removal

None during this period.

E. Commercial Fishing

None during this period.

F. Other Uses

None during this period.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Experimental Goose Nesting Platforms

Spring checks of 106 artificial goose nesting platforms revealed that 40 of the structures were not available for nesting geese this spring. Some were tipped over, however, the majority were flooded or had the nesting material washed from them. Of the 66 platforms available 17 were used by nesting geese. Two ducks nested simultaneously with geese on two of the structures, possibly causing the desertion by the geese.

During the past three years 18, 19 and 17 platforms have been used but the percentage used of the number available dropped from 38% last year to less than 26% this year.

Of particular importance was the drop in hatching success of goose nesting on the structures. In the previous two years of comparison there was a less significant difference in the hatching success between ground nesting and platform nesting birds. In 1967 about 59% of the platform nests had eggs hatched on them while 77% of the 26 ground nests hatched eggs. To further bring out the difference the percentage of eggs hatched was 33.7% and 70.6%, respectively. Most of the eggs were infertile or contained dead embryos. Thirteen complete hatches were noted on ground nests and only two in platforms.

This should indicate that although artificial nest structures are relatively predator free other hazards may be experienced by platform nesting birds. The possibility exists that these nests are more susceptible to extreme climatic or weather conditions.

During the past three years artificial platforms have made up the largest percent (36.1) of known nesting sites on the refuge. However, a more complete check was made of structures than any other nesting habitat so other sites could have attracted a larger number of nesting birds. As in previous years the most acceptable platforms were those located in coves or bays associated with peninsulas and islands where ample loafing sites were available.

Ten fiberglass nest structures were added to the refuge total this spring, however, placement was too late to benefit nesting geese. If acceptable this type of platform will be easier to handle and maintain.

B. Experimental Predator Control and its Affect on Waterfowl Nesting Success

The eight-year cooperative predator control study was terminated in 1966 and the final report is still in review at the Denver Wildlife Research Center.

The extensive trapping program was discontinued as previous years data revealed little if any residual effect on predator populations. A limited control program was conducted in 1967 preceeding and during the nesting period. A total of 47 potential predators, including 29 skunk and 15 raccoon were removed from the west side. On the east side 42 were removed of which 21 were skunk and 19 were raccoon, (See Table VIII). Under extensive control of previous years between 300 and 380 were removed.

TABLE VIII. Number of Animals Removed by Species and Method for Each Half of The Refuge.

Species	Live Trap		Shot	Total
	Male	Female	Male & Female	
(WEST SIDE)				
Skunk	15	6	8	29
Raccoon	8	5	2	15
Mink	3	-	-	3
Sub-total	26	11	10	47
(EAST SIDE)				
Skunk	11	5	5	21
Raccoon	5	6	8	19
Mink	2	-	-	2
Sub-total	18	11	13	42
TOTAL	44	22	23	89

One-hundred simulated duck nests were again placed on each half of the refuge during the height of the nesting season. Results showed a survival of 57.5 percent for the entire refuge (Table IX). It is thought that the increased survival this year may be the result of decreased flooding of upland. Under heavy flood conditions of 1966 predators had less ground to cover to locate the same number of nests. Total survival closely approached that of 1965. However, when survival on individual sides is considered, it is interesting to note that they were exactly opposite the 1965 results.

TABLE IX. Nesting Success as Measured by Simulated Nests

YEAR	Percent Nests Undisturbed		Total Hatching Success
	West Side	East Side	
	Treated	Untreated	
1959	82	18	
1960	71	25	
1961	92	38	
	Untreated	Treated	
1962*	34	71	
1963	45	93	
1964*	60	89	
	Treated	Treated	
1965*	48	69	58.5
1966*	28	66	47.0
1967*	68	47	57.5

* Years of floods

A flushing bar extended from a pickup truck was used to locate natural duck nests this year. Twenty-eight nests were located in the 138.9 acres searched. The resulting nest density of 4.9 acres/nest was considerably lower than the densities of 3.3 and 1.6 recorded in 1966 and 1965, respectively. However, a more extensive search was conducted in 1965.

Of the 28 nests located, 82 gadwall and 16 mallard eggs from a total of 12 nests were collected for transfer to the Northern Prairie Wildlife Research Center. This left 16 natural nests to be rechecked for hatching success. Although the sample was small, the resulting hatching success of 37.5% closely approached the 38% rate found in 1966. Of the remaining nests, 12.5% were deserted and 50% were destroyed by predators.

Hatching success in 1967 as measured by natural and simulated nests closely approached the success recorded during the years of extensive predator control. This indicates that perhaps limited control during the peak nesting period is as effective as an extensive removal program. However, further study and evaluation is needed.

C. Aquatic Plant Transects

The annual aquatic plant survey was conducted by Wildlife Aid, Douglas Sanvik under the guidance of Assistant Manager, Bellinger. The survey

was conducted during the period of July 22 to August 1. A total of 13 transects were surveyed on nine separate pools, and 26 different species of aquatic plants were recorded.

Six of the nine pools surveyed showed increases in frequency of occurrence of desirable submerged aquatics. The increased use of a garden rake in sampling was thought to be mainly responsible for these increases. However, definite increases in some beds of pondweeds was observed. Continued encroachment by cattails in shallow water areas and willow on shorelines and spoilbanks was noted, particularly in Northwest and Agassiz pools.

D. Herbarium

No new specimens were added to the refuge herbarium this year. Emphasis will be placed on the collection of aquatic plants in 1968.

E. Canada Goose Management Study

A management study "A Life History of The Agassiz Refuge Goose Flock" was approved in 1965 and three years of data have been gathered. Following is an abstract of that data.

Canada geese at Agassiz begin to nest during the second week of April with the first broods showing during the same period in May. Peak hatching occurs during the third week of May (18-25).

Agassiz and Thief Bay pools attract and raise the largest number of geese based on observations in 1966 and 1967. The two units containing these pools accounted for just under 63% of the 113 nests found during those two years. Agassiz Pool contained 38% of the nests, however, per acre of habitat Thief Bay Pool was more attractive. Tamarack and South pools were also preferred nesting areas.

Considering three years of data on 155 nest, platforms had the highest frequency of use (36.1%) with spoil banks and peat hummocks representing 34.9% and 16.1%, respectively. Because of the complete survey of nest platforms it is likely that spoil banks attract the highest percentage of nesting geese. Muskrat houses, and islands, both artificial and natural, provide the remainder of the nest sites.

Materials used in nests depended largely on the vegetation available, however, the type of nest site with associated cover had much to do with site selection. Geese tended to select sites which were secluded or provided the most protection. Wild hay of flax straw as nest material

had the highest frequency of use simply because of its availability on artificial platforms. Sedges and grasses, and cattails had a frequency of use of 17.5% and 13.6%, respectively. Willow and thistle each were used in 9.7% of the nests and were generally located in relatively sparse cover indicating the preference for seclusion and protection and not cover.

Egg measurements of 336 eggs during the three year period indicate a significant decrease in size, both in length and width, during 1967. Size differences are thought to be the result of variation in measurement and not changes in the age structure of nesting geese.

Clutch sizes varied between 1 and 8 with 31.2% containing 6 eggs, The average clutch size for the three years was 4.9 and varied from 4.4 in 1965 to 5.3 in 1966. Completed clutches in nest platforms were slightly smaller than those nests on the ground, however, the difference of 0.18 egg is insignificant.

The percent of 157 nests hatched during the three years averaged 84.7% varying greatly from 94.3% in 1966 to 69.8% in 1967. Predators did not limit nest success as only one nest was found destroyed. Some of the 12 deserted nests may have been the result of predator activity. Of 785 eggs in the nests 74% hatched with 1967 the poorest year with 56.6% hatching. A high number of infertile eggs or eggs containing dead embryos limited hatching to only 33.7% in platform nests in 1967.

Recoveries of local geese banded on the refuge in 1965 and 1966 showed a recovery rate of nearly 35%. Hunting pressure, most of which occurs in the vicinity of the refuge, is too heavy to allow increases in the flock. Recoveries of 97 birds from 1961-1966 showed Minnesota as the main recovery area accounting for 65.9% of the total, 54.6% in the vicinity of the refuge. The Swan Lake, Missouri area accounted for 17.5%, and 5.2% were recovered near Sardis Refuge, Mississippi where a portion of the Agassiz flock winters.

F. Banding Program

No quotas were established for the refuge this year. However, as banding operations were underway before the notice on quotas was received and for station information, some banding was conducted.

A total of 1,170 ducks, 70 geese and 50 mourning doves were banded (Table X).

The ducks were captured in one swim-in and two walk-in traps. One semi-clover leaf walk-in trap, with both entrances at the water line,

TABLE X. Summary of Banding, 1967

Species	Quota	Local M	Local F	After H.Y. M	After H.Y. F	Hatching Yr. M	Hatching Yr. F	Total
Mallard	-	25	25	108	225	83	38	504
Black duck	-	-	-	22	5	1	-	28
Pintail	-	-	-	-	1	2	4	7
Blue-winged teal	-	-	1	69	78	186	207	541
American widgeon	-	-	-	3	1	1	1	6
Wood duck	-	-	-	70	1	-	-	71
Shoveler	-	-	1	-	-	-	-	1
Redhead	-	-	-	-	10	1	-	11
Ring-necked duck	-	-	-	-	-	1	-	1
Sub-totals	-	25	27	272	321	275	250	1,170
Canada geese	1/	27	31	2	5	4	1	70
Mourning dove	100	-	-	36	6**	4*	4*	50
TOTALS		52	58	310	332	283	255	1,290

1/ As many as possible.
* Sex not positively determined.
** Sex not positively determined on two individuals.

caught most of the blue-winged teal during an eight day period. The 1,170 ducks were banded at a total cost of $304.02 ($1.26/bird).

This year the increased wariness of resident Canada geese resulted in only 70 birds being banded, at a cost of $8.34 per bird. The birds were captured in one swim-in and three walk-in cage traps. The most productive trap proved to be a cage trap that was constructed on an old artificial nesting island (See photo Ag. 564-6).

The 50 mourning doves banded this year proved to be a station record. These birds were taken in conventional style dove traps at a cost of $.91 per bird. About 60 percent of the man-hour cost was donated time.

Of the 200 direct recoveries from 2,562 ducks banded in 1966, 34.0% were harvested in Minnesota, 60.0% in the 24 other states reporting recoveries and 6.0% in Canada. These percentages reflect the recovery rates for mallards which accounted for 175 of the total recoveries. Of the other states, Illinois, Iowa, North Dakota and Arkansas were the most significant recovery areas with 9%, 8%, 7% and 7% of the total recoveries, respectively.

Only 8.5% of the total recoveries were from the vicinity of Agassiz. However, when Minnesota returns are treated separately, 27.8% of the state's total were taken in the refuge vicinity. The low number of returns (8.5% of the total) does not necessarily show the true harvest rate for the refuge vicinity since records of banded birds show pre-season movement out of the area.

G. Experimental Crow Control

This study was not continued during 1967.

VI. PUBLIC RELATIONS

A. Recreational Use

Agassiz Refuge was excluded from the listing of those designated for fee collecting in 1967. Public use increased after dropping off in 1966 with the indoctrination of the "fee". We are again able to encourage visitors and develop an aesthetic appreciation without the embarrassment of asking our guests for a monetary payment. We renewed our enthusiasm towards increasing public use for the purposes of wildlife observation, photography, general sightseeing, and enjoyment of natural environmental conditions. Such use provided personnel with the opportunities for gaining public support of the true objectives for which refuges were established, and for the ever increasing need for application of sound conservation practices by all people.

We are striving towards the achievement of these goals through refuge tours, promotional activities listed above, slide and movie presentations, and conducted meetings with organized adult and youth groups.

We like to feel that our conscientious efforts towards the type of public use described above were of utmost consideration when Agassiz was selected for the Region's PUBLIC SERVICE AWARD for 1967.

B. Visitors

A frequent visitor to the refuge this year was Don Fearn, Conservation Officer, Thief River Falls, Minnesota. A list of other official visitors follows:

Date	Name	Title and Affiliation	Purpose of Visit
1/5	Roger Mustonen	Bureau, Eng., Mpls., M.	Topographic surv
1/5	Peter Roy	" " " "	" "
1/5	Steve Mason	" " " "	" "
2/20	Conrad Olson	Minn. Cons. Dept.	Courtesy call
2/27	Herman Anderson	" " "	" "
2/27	Evertt Clem	" " "	" "
2/27-28	Frank Martin	Bureau, Mpls., Minn.	Refuge inspection
2/27-28	John Winship	Bureau, Mpls., Minn.	Aerial big game census
3/7	Robert Klobeck	SCS, Grygla, Minn.	Cropland mgmt.
3/7	Robert Farmes	Minn. Cons. Dept.	Conservation Ed.
3/7	Jerry Maertins	" " "	" "
5/7	Chuck Harris	Mich. Cons. Dept.	Refuge tour

Date	Name	Title and Affiliation	Purpose of Visit
5/7	Arthur Hawkins	Bureau, Flyway Rep.	Field trip
5/7	Edward Mikula	Mich. Cons. Dept.	" "
5/11	James Pulliam	Bureau, Wash., D.C.	Refuge orientation
6/1	Donald Vogtman	Bur. R. Basins, Mpls.	Watershed Thief River
6/8	Harold Paeschal	Soil Cons. Service	Grassland Mgmt.
6/8	Robert Klobeck	" " "	" "
6/20	Joseph Flakne	Bureau, retired	Visit homestead
6/21-22	Clair Rollings	Bureau, Mpls., Minn.	Land Use, S&M
6/22	David Swenson	USGMA, Fergus Falls, M.	Discuss Banding
6/29	Carl Anderson	Marshall Co. Agr. Insp.	Check leafy spurge
6/29	Dr. John Tester	U. of Minn.	Refuge Tour
7/12	Clark Wingard	Bur., Eng., Mpls., Minn.	Construction Insp.
7/12	Ray Wright	Bur., Eng., Mpls., Minn.	Construction Insp.
7/26-27	W. Patrick Carney	Minot State College	Rodent Sampling
7/26-27	Dave Hanson	" " "	" "
8/17	Ray Murdy	Bur., Jamestown, N. Dak.	Courtesy call
8/31	Harry Pinkham	USGMA, Grand Rapids, M.	Depredations
9/1	Joe Knecht	Bureau, Eng., Mpls.	Construction Insp.
9/7	Marvin Lundeen	Ed. Thief River F. Times	News article
9/8	Clark Wingard	Bur., Eng., Mpls., Minn.	Construction Insp.
9/10	Warren Nord	Bureau, Mpls., Minn.	Water Mgmt.
9/12	Harold Paeschal	Soil Cons. Service	Grassland Mgmt.
9/12	Clarence Treumer	" " "	" "
9/12	Robert Klobeck	" " "	" "
11/1	Norm Johnson	Bureau, Wildlife Services	Predator Control
11/1	William Anderson	Dept. of Agriculture	" "
11/3	Robert Burwell	Regional Director, Bur.	Thief River Channel
11/15	Ray Wright	Bur., Eng., Mpls., Minn.	Construction Insp.
11/15	Clark Wingard	Bur., Eng., Mpls., Minn.	Construction Insp.
12/4	Marvin Mansfield	Mgr., Slade Refuge	Courtesy Call

C. Refuge Participation

An all out effort was made in conservation-education during National Wildlife Week. Seventeen area schools (4,000 students) were shown the film entitled: "This is The Mallard", or were given a slide talk. An exhibit was set up in the public library in Thief River Falls and was viewed by approximately 500 people.

An exhibit, tended by refuge personnel, was set up at the Marshall County fair. During the three days of the fair 4,00 people viewed the exhibit.

Following is a complete listing of refuge participation:

Date	Organization	Participation	Attendance	Personnel
2/6	Crookston Cons. Club	Slide-talk	115	Cline Bellinger
2/20	Wash. Ele. School PTA	Slide-talk	55	Cline
3/6	TRF Junior College	Slide-talk	60	Cline
3/6	TRF Junior College	Slide-talk	40	Cline
3/13	Viking school PTA	Slide-talk	75	Cline
3/15	Pennington Co. Sports-man Club	Attend	50	Cline,Lee, Bellinger
3/15	Karlstad School	Talk & Film	600	Alexander
3/15	Holt School	Talk & Film	70	Lee
3/16	Warren High School	Slide-talk	500	Cline
3/17	Middle River School	Talk & Film	350	Alexander
3/17	Knox School, TRF	Slide-talk	100	Lee
3/17	Mark Twain School, TRF	Slide-talk	100	Lee
3/17	Newfolden School	Talk & Film	500	Lee
3/20	Washington School, TRF	Slide-talk	350	Cline
3/20	Grygla School	Talk & film	225	Alexander Bellinger
3/20	Gatzke School	Talk & Film	50	Alexander Bellinger
3/21	Northrup School, TRF	Slide-talk	200	Cline Bellinger
3/21	Lincoln High School	Slide-talk	200	Cline Bellinger

Date	Organization	Participation	Attendance	Personnel
3/22	Viking School	Slide-talk	90	Cline
3/22	Goodridge High School	Talk & Film	400	Cline,Lee
3/22	Public Library, TRF	Talk & Film	26	Cline
3/28	Adventists School, TRF	Talk & Film	21	Cline
4/3	Stephen Rod & Gun Club	Talk & Film	200	Lee Bellinger
4/19	Pennington Co. Sportsman Club	Slide-talk	50	Cline Alexander
4/24	Newfolden 4-H Club	Slide-talk	25	Lee
4/25	SCS Rural Development	Discussion	-	Alexander
5/23	Thief R. Falls, Grade 6	Refuge Tour	40	Lee
5/23	Strandquist, Grade 10	Refuge Tour	18	Bellinger
5/23	Crookston Agr. Ins. Biol.	Refuge Tour	40	Cline
5/26	Knox Elementary School	Refuge Tour	50	Cline
6/1	Junior College, TRF	Refuge Tour	86	Bellinger
6/7	Crookston Cons. Club	Talk & Film	12	Alexander
6/9	Lutheran Church, Roseau	Talk & Film	30	Cline
6/10	Goodridge 4-H Club	Refuge Tour	16	Lee
6/21	Depredations Meeting, TRF	Discussion	-	Alexander Bellinger
6/2	TRF, High School, Biol.	Refuge Tour	5	Cline
6/29	Itasca Field Ecology class	Refuge Tour	25	Cline
7/7	Viking School, Headstart	Refuge Tour	20	Cline
7/7	TRF, High School, Biol.	Refuge Tour	6	Cline
7/16	Zion Lutheran, TRF	Refuge Tour	25	Cline
7/26	Itasca Vertebrate Ecology	Refuge Tour	22	Cline

Date	Organization	Participation	Attendance	Personnel
7/27	TRF, Norhrup School	Refuge Tour	26	Cline
8/4	TRF, High School Biol.	Refuge Tour	6	Bellinger
9/20	Pennington Co. Sportsman Club	Attend	20	Cline
9/20	Law Enforcment Meeting	Discussion	10	Bellinger Lee
9/25	Rotary Club, Thief R.F.	Slide-talk	40	Cline
10/16	Middle River High School	Refuge Tour	20	Bellinger Lee
10/30	Sportsman Club Roseau Co.	Slide-talk	45	Cline
11/6	U. of Minn. Inst. Conservation Class, Crookston	Refuge Tour	7	Cline
12/6	Depredation Annual meeting	Discussion	-	Alexander
12/19	Grygla SCS Land Use Practices and Rec. Meeting	Discussion	12	Alexander

News releases were prepared throughout the year and sent to area newspapers to keep the public better informed of our activities. Several radio tapes were also prepared for local broadcasting station regarding the opening of the hunting seasons.

All personnel continue to participate in community activities. Assistant Manager, Bellinger and Administrative Assistant, Lee reorganized the local Boy Scout Troop at Holt, in November, and continue to hold weekly meetings.

D. Hunting

1. Deer Harvest

Agassiz was again open to deer hunting during the 1967 Minnesota firearms season. The refuge was within the five-day zone, the season extending from November 11 through November 15.

This year the field interview survey method and the mail questionnaire survey were both conducted to determine which was the best technique

for measuring harvest rates. Upon advice of supervisory personnel, it was decided that the mail questionnaire method gave the most accurate results. Therefore, the mail questionnaire technique was used to determine the following harvest characteristics.

Approximately, 1,256 individual hunters killed 438 deer on the refuge. This resulted in a hunter success of 34.9 percent (Table XI).

TABLE XI. Deer Harvest Statistics, 1962-1967

Year	No. Days in Season	Hunter Days	Number of Individual Hunters	Percent Success	Estimated Kill
1962	5	1,629	949	35.0	332
1963	9	2,253	1,443	26.9	338
1964	5	927	603	31.6	191
1965	5	846	523	36.0	188
1966	5	1,464	870	34.0	296
1967	5	2,485	1,256	34.9	438*
TOTAL & AVE.		9,604	5,644	31.6	1,783

* The field interview showed a total kill of 207 deer and hunter success of 16.5 percent.

Of the 84 deer checked, 32 (38.1%) were adult males, 19 (22.6%) adult does and 33 (39.3%) fawns.

2. Goose Harvest

Just under 5,000 geese, most of which were Canadas were present on the refuge when the season opened at noon on September 30. Feeding flights of birds were well established on farmfields to the north and northwest of the refuge and hunter pressure was the heaviest in those areas. Areas to the west, northwest, southwest and southeast showed the greatest concentration of boundary hunters which made up 48% of the total hunters contacted in a hunter survey. The remaining 52% were field hunters, most of which had decoys and hunted from a blind.

The hunter survey conducted during the first nine days of the season on 122 square miles surrounding the refuge showed that 4,664 hunters killed 1,026 geese in 1967. This total (including 120 cripples) included 988 Canadas and 38 snows and blues. Crippling losses

represented 11.7% of the total birds knocked down, however, it is thought that the rate for the entire season was closer to 20%. For the entire 70 day goose season the kill in the refuge vicinity was estimated to be between 1,500 and 1,600 birds.

Although the number of hunters remained relatively unchanged from last year the number of geese killed increased 32%, largely due to increased success during the middle of the week. Kill during weekdays increased from 8.4% in 1966 to 25.8% in 1967. Hunter pressure during the week also increased possibly indicating an attempt by many to get away from the heavy, unsportsmenlike weekend hunting. Mornings were the most productive for hunters as they bagged over 3/4 of the birds in the morning hours. Field hunters were slightly more successful than boundary hunters taking one goose per 5.5 and 6.2 hunters, respectively.

As in the past most of the geese were killed during the first two days of the season. This year 62% of the harvest was taken during the opening weekend. For the past four years the kill during the opening first two days has averaged just over 65% with 35% of the harvest occurring on opening day and 30% occurring the second day.

The majority of the waterfowl hunters that come to this area are local, however, more and more each year are travelling greater distances to enjoy the sport of waterfowling. The survey showed that about 70% of the hunters were from the 7th (northwest) district with a large number coming from the Thief River Falls area. License plate checks also revealed that 14.4% were travelling from the Twin Cities area to hunt. As in most areas that have a hunting attraction, hunter enthusiasts proured considerable funds into the local economy.

3. Duck Harvest

The 40 day 1967 Minnesota duck season opened at noon on October 7. Ideal weather conditions and a good supply of birds resulted in an abundance of mallards moving out to adjacent grain fields on opening day. Hunters experienced little difficulty in bagging their two-mallard limit. However, lack of suitable off-refuge water areas limited the harvest on other species. Only two locations on the three local State Wildlife Management Areas, contained enough water to attract birds.

After opening day hunter success rapidly dropped off but some field shooting was noted until freeze-up during the first week of November.

4. Ruffed and Sharp-tailed Grouse Harvest

Good to excellent ruffed grouse hunting was typical throughout the area this fall. Hunting was especially good in the Beltrami Island State Forest located about 25 miles east of the refuge. It was the general concensus of local hunters that ruffed grouse numbers were up this season from the past several years.

Local sharp-tailed grouse populations were slightly higher than last year. These increases were especially noticeable in the areas south and west of the refuge. Due to the light hunting pressure and extreme wariness of these birds, few sharp-tails were harvested in the vicinity of the refuge.

E. Violations

Preventive enforcement patrols in correlation with harvest surveys by refuge personnel, and the excellent cooperation of local State conservation officers and federal game management agents kept violations at a minimum this year.

The following apprehensions were made by refuge personnel. All charges were filed in State court.

Name and Address	Violation	Disposition
James G. Kzaley, St. Paul, M.	Shooting Sandhill Crane	$44.00 fine
Lawrence Peterson, Mpls., M.	Shooting deer during closed season.	$100.00 fine ($50.00 suspended) Gun confiscated
Kenneth B. Moravitz, Turtle Lake, Wisc.	Trans. Loaded gun.	Warning
Harold E. Myers, Thief River Falls, Minn.	Trans. Loaded gun.	Warning

In addition to the above, State officers and federal game management agents made the following apprehensions in the refuge vicinity.

Violation	Number
Shooting protected birds	9
Trespass on the refuge	2
over-limit of ducks	2
TOTAL	13

F. SAFETY

Periodic and informal SAFETY meetings were held throughout the year. Many unsafe practices were brought out and corrective action was taken. No accidents occurred during the year, therefore, our station SAFETY record now stands at 473 days without a lost time accident.

VII. OTHER ITEMS

A. Items of Interest

1. Personnel Transfers

Assistant Manager, David Cline, left Agassiz on December 2, 1967, with a leave of absence arrangement to return to Minnesota University to pursue work toward his Ph.D. Dave received word on October 30 that he had been awarded a research scholarship as a part of a grant recently awarded to the Minnesota Museaum of Natural History by the Natural Science Foundation. Dave will work with Dr. Donald Siniff of the Museum staff on a seal population study in Antarctica for about three months this winter (summer there). He is scheduled for departure from Magellen Straits, tip of South America, on January 18, 1968, on an NSF chartered icebreaker. We, of course, miss Dave, his wife (Denna) and son, Eric. We can only wish him the very best of luck and success in furthering his education, and hope he will return to our Bureau better prepared than ever to continue the excellent work towards achieving conservation objectives.

Howard A. Lipke was promoted from the Assistant Manager position at Necedah to Assistant Manager at Agassiz. He arrived, along with -43 degree temperatures, on January 6, 1968. Howard's and his wife Alynn's home is Walkerton, Indiana. They have a daughter, Jennifer, eleven months, and two dogs of questionable heritage, but good pets. The Lipke's are a fine family, a welcome addition to our community and obviously a credit to our Bureau and Agassiz Refuge.

Howard graduated from the University of Montana, Missoula, in 1963, with his degree in Wildlife Management; major in zoology, minor in botany. He was first employed by our Bureau as Wildlife Biologist with River Basins, Huron, South Dakota. He was promoted and transferred to Necedah Refuge in January 1965, where he served until

coming to Agassiz. In the short time he has been here, we have recognized outstanding qualities of character, professional competence and a dedication to his chosen career.

Jay R. Bellinger, Assistant Manager (trainee) arrived January 6, 1967. (We announced Jay's arrival briefly in our 1967 narrative). He graduated from Michigan State in 1966, with a degree in Wildlife Management. He and his wife, Nancy, became parents for the first time during the year. Daughter, Stephani is now three months old.

Jay has demonstrated many fine personal qualities, and excellent potentialities for refuge management. His services have long passed the "trainee" level as is best illustrated by parts of this narrative. With Dave Cline's departure, Jay assumed much of the narrative report responsibility.

2. Photography

Our photo section, including complete processing from subject exposure to "you look at it" is proudly attributed to our Administrative Assistant, Marvin Lee. Marv's photography enthusiasm, physical ability to get where the subject is, patience, and willingness to donate personal time are responsible for outstanding wildlife pictures being added to Agassiz's collection. This is evidenced by advising that all wildlife pictures used on the four cover photo contest reminders sent out by Region III were photos taken by Marv.

Credit must also be given to the photography interest of David Cline and Jay Bellinger. Their interest is contributing greatly to Agassiz's effort, pictorially, in selling conservation. Jay came to the refuge's aid by loaning his 35mm camera while the Government's Pentax Spotomatic was back to Honeywell for repairs.

We expect to recognize Howard Lipke's photos in the future. We understand his interest in photography runs pretty high. It must be in wildlife. We noticed the usual "family or kid" picture on his desk is an outstanding color photo of day-old goslings.

3. Narrative Report Preparation

If there is any single work project that represents the combined efforts of the entire staff, it is the annual narrative report. All hands cooperatively provide bits of information from the endless list of widely diversified activities. All are funneled into

their respective sections of the narrative to constitute the final report which has proven to be invaluable to succeeding personnel and to achievement of refuge objectives.

Howard Lipke arrived just in time to provide valuable assistance to Jay Bellinger with collecting, compiling, and assembling data for Sections I, Part B, II, IV, V, VI, Parts D and E. Marvin Lee prepared Section I, Part A, and Section VI, Parts B, C and F and photo section. Alexander prepared Section III, VI, Part A, and Section VII. All worked together in editing the major portion of which is credited to Jay and Howard.

The truly big job of final preparation including typing and assembling is again credited to Marvin Lee, and commendably so.

4. Goose Hunter Kills Deer in Self Defense

On October 1, the second day of our 1967, goose season, Alexander was on routine patrol and goose kill survey work near the west boundary. A group of hunters excitedly flagged him down, pushed three young hunters forward with the comment, "all right now, tell him what you've done".

One of the three, Lawrance Peterson, reported he had shot a deer which he believed was charging him. The other hunters who had taken the initiative in apprehension, filled in the details. Several groups of hunters were making their way to goose hunting spots before daylight. One hunter jumped two deer and one of the startled animals ran blindly in a direct line towards Peterson. The young hunter who said he had never hunted before, or had ever seen a deer, explained that all he could see in the darkness was a large animal crashing towards him. He frankly admitted that he was scared, panicked, and raised his gun and shot without thinking of any other means of protecting himself.

We wanted to believe the boy's story and had no reason to doubt it. The deer was shot almost between the eyes and not in the rear as some moose have been that were allegedly killed "in self defense".

The case was turned over to State conservation officers for disposition and is reported under violations. The deer was salvaged and sold by the State to one of the hunters who had helped field dress the animal.

SIGNATURE PAGE

Submitted by:

Claude R. Alexander
(Signature)

Claude R. Alexander
Refuge Manager
Title

Date: _____

Approved, Regional Office:

Date: FEB 14 1968

(Signature)

Regional Refuge Supervisor

3-1750a
Cont.-NR-1
(Rev. March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Agassiz MONTHS OF January 1 TO April 30, 19 67

(1) Species	(2) Weeks of reporting period April 11	12	13	14	2/8 15	9/15 16	16/22 17	23/29 18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada					471	354	236	1,581	18,194		
Cackling								3	21		
Brant											
White-fronted											
Snow								30	210		
Blue								18	126		
Other **Total Geese:**					471	354	236	1,632	18,851		
Ducks:											
Mallard					3,200	2,650	2,100	1,334	66,988		
Black											
Gadwall						45	90	270	2,835		
Baldpate						90	180	1,070	9,380		
Pintail					710	440	170	210	10,710		
Green-winged teal					20	160	260	1,650	14,630		
Blue-winged teal						610	1,230	1,760	25,200		
Cinnamon teal											
Shoveler					80	285	490	670	10,675		
Wood							50		350		
Redhead						90	180	780	7,350		
Ring-necked					90	585	1,010	1,080	19,355		
Canvasback							750	590	9,380		
Scaup					310	3,685	7,060	8,130	134,295		
Goldeneye					1,550	990	440	50	21,230		
Bufflehead					10	400	800	920	14,910		
Ruddy							110	620	5,110		
Other Am. Merganser					260	240	250	60	5,670		
Coots: H. " "					120	70	20		1,470		
Red-B. " "							20		140		
Total Ducks:					6,350	10,340	15,280	19,150	359,670		
					(over)						
Coots:						3,190	6,380	12,690	155,820		

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	
Geese	18,851	1,632	
Ducks	359,678	19,150	
Coots	155,820	12,690	

SUMMARY

Principal feeding areas Flooded farm fields off the refuge and on the burned off area along west side of Agassiz Pool.

Principal nesting areas

Reported by David R. Cline, Assistant Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Agassiz Months of January 1 to April 30 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common loon	-	-	-	-	Uncommon spring migrant					
Red-necked grebe	4	4/21	14	4/28	Summer resident					
Horned grebe	9	4/21	20	4/28	Summer resident					
Eared grebe	-	-	-	-	Summer resident					
Western grebe	1	4/21	1	4/21	Summer resident					
Pied-billed grebe	1	3/29	22	4/21	Summer resident					
White pelican	4	4/18	10	4/25	Rare spring migrant					
Double-crested cormorant	1	4/11	44	4/28	Summer resident					
Great blue heron	2	3/30	35	4/21	Summer resident					
Common egret	1	4/13	1	4/13	Occasional visitor					
Bl.-cr. night heron	1	4/14	2	4/18	Summer resident					
American bittern	1	4/12	1	4/12	Summer resident					
Sandhill crane	1	4/11	10	4/22	Spring migrant					
II. Shorebirds, Gulls and Terns:										
Killdeer	1	3/30	1	3/30	Summer resident					
Common snipe	1	4/22	2	4/23	Summer resident					
Greater yellowlegs	7	3/31	13	4/22	Spring migrant					
Lesser yellowlegs	-	-	-	-	Spring migrant					
Marbled godwit	2	4/25	3	4/25	Summer resident					
Herring gull	1	4/12	825	4/23	Spring migrant					
Ring-billed gull	80	4/18	80	4/18	Spring migrant					
Franklin's gull	2	3/31	2	3/31	Summer resident					

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	1	3/27	-	-	-	-	Summer resident	
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	2	1/12	7	4/7	7	4/7	Winter resident	
Duck hawk	-	-	-	-	-	-	Spring migrant	
Horned owl	-	-	-	-	-	-	Permanent resident	
Magpie	1	1/13	1	1/13	-	-	Winter resident	
Raven	4	3/1	4	3/1	-	-	Permanent resident	
Crow	1	3/9	48	4/7	-	-	Summer resident	
Goshawk	1	3/22	1	3/22	-	-	Summer resident	
Red-tailed hawk	1	3/21	2	4/22	-	-	Summer resident	
Rough-legged hawk	1	3/4	13	4/7	-	-	Spring migrant	
Bald eagle	1	4/7	2	4/14	1	4/18	Spring migrant	
Marsh hawk	2	3/18	3	4/28	-	-	Summer resident	
Sharp-shinned hawk	1	4/18	1	4/18	1	4/18	Spring migrant	
Sparrow hawk	1	3/26	1	3/26	-	-	Summer resident	
Northern shrike	-	-	-	-	-		Reported by D. R. Cline, Asst. Mgr.	
Snowy Owl	1	1/13	1	4/21	1	4/13	Spring migrant	
Short-eared owl	2	4/23	3	4/25	3	4/25	Spring migrant	

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C. 59317

3-1752
Form 8-2
(April 1946)

UPLAND GAME BIRDS

Refuge Agassiz Months of January 1 to April 30, 19 67

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	-	-	-	-	-	-	-	-	300 rough Est.	Five birds observed during the reporting period.
Sharp-tailed Grouse	-	-	-	-	-	-	-	-	25 rough Est.	Twenty birds observed during the reporting period.
Gray Partridge	-	-	-	-	-	-	-	-	None	No birds observed during the reporting period.
Ring-necked Pheasant	-	-	-	-	-	-	-	-	None	No birds observed during the reporting period.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

17059

3-1754
Form N-4
(June 1945)

SMALL MAMMALS

Refuge Agassiz Year ending April 30, 67

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Mink	Unknown	-	0	35	0	0	0	I-9466 I-9467	18	17 (* Sold locally - 17)	0 *	0	0	Unknown
Muskrat	"	-	0	1,984	0	0	0	I-9466 I-9467	1,488	496 (**(496 hides sold locally)	0 **	0	0	"
Beaver	"	-	0	35	0	0	0	I-9468 I-9469	35	0	0	0	0	"
River Otter	"	-	0	0	0	0	0	- -	0	0	0	0	0	"
Stripped Skunk	"	-	0	0	152	0	0	- -	0	0	0	0	0	"
Woodchuck	"	-	0	0	0	0	0	- -	0	0	0	0	0	"
Raccoon	"	-	0	5	154	0	0	- -	0	0	0	0	0	"
Ferral cat	"	-	0	0	2	0	0	- -	0	0	0	0	0	"
Red Fox	"	-	0	6	28	0	0	- -	0	0	0	0	0	"
Ferral dog	"	-	0	0	1	0	0	- -	0	0	0	0	0	"
Bobcat	"	-	0	0	0	0	0	- -	0	0	0	0	0	"
Coyote	"	-	0	0	1	0	0	- -	0	0	0	0	0	"
Badger	"	-	0	0	0	0	0	- -	0	0	0	0	0	"
Franklin's ground sq.	"	-	0	0	0	0	0	- -	0	0	0	0	0	"

* List removals by Predator Animal Hunter

REMARKS:

Reported by David R. Cline, Assistant Refuge Mgr.

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

116007

3-1750
Form NP-1
(Rev. March 1953)

WATERFOWL

REFUGE Agassiz

MONTHS OF May TO August, 19 67

(1) Species	(2) Weeks of reporting period: May 1-7 (1)	8-14 (2)	15-21 (3)	22-28 (4)	29-4 (5)	June 5-11 (6)	12-18 (7)	19-25 (8)	26-2 (9)	July 3-9 (10)
Swans:										
Whistling	6									
Trumpeter										
Geese:										
Canada	163	76	345	345	345	345	345	345	345	345
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other Total geese	163	76	345	345	345	345	345	345	345	345
Ducks:										
Mallard	2,350	1,060	940	924	924	924	924	924	924	924
Black	10									
Gadwall	220	1,260	2,340	1,186	1,186	1,186	1,186	1,186	1,186	1,186
Baldpate	1,110	280	580	72	72	72	72	72	72	72
Pintail	570	150	160	8	8	8	8	8	8	8
Green-winged teal	1,040	480	320	134	134	134	134	134	134	134
Blue-winged teal	2,350	3,270	4,480	1,892	1,892	1,892	1,892	1,892	1,892	1,892
Cinnamon teal										
Shoveler	930	1,610	1,720	76	76	76	76	76	76	76
Wood										
Redhead	290	480	400	1,244	1,244	1,244	1,244	1,244	1,244	1,244
Ring-necked	390	560	660	562	562	562	562	562	562	562
Canvasback	690	290	180	216	216	216	216	216	216	216
Scaup	4,770	4,790	2,380	774	774	774	774	774	774	774
Goldeneye		20								
Bufflehead		240	180							
Ruddy	280	1,000	310	580	580	580	580	580	580	580
Other C. Merganser	10									
H. Merganser										
Total Ducks	15,830	15,490	14,650	7,668	7,668	7,668	7,668	7,668	7,668	7,668
Coot:	23,580	21,380	7,420	4,874	4,874	4,874	4,874	4,874	4,874	4,874

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cont. NR-1
(Rev. March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Agassiz MONTHS OF May TO August, 19 67

(1) Species	July (2) August Weeks of reporting period 10-16 (11)	17-23 (12)	24-30 (13)	31-6 (14)	7-13 (15)	14-20 (16)	21-27 (17)	28-3 (18)	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling									42		
Trumpeter											
Geese:											
Canada	345	345	345	500	500	500	500	500	45,738	67	155
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other **Total geese**	345	345	345	500	500	500	500	500	45,738	67	155
Ducks:											
Mallard	924	924	924	5,718	10,090	15,226	10,060	10,602	457,002	49	4,794
Black					290	644	214	616	12,418		
Gadwall	1,186	1,186	1,186	3,052	460	1,710	3,270	5,224	205,772	30	1,866
Baldpate	72	72	72	72	60	828	312	2,120	42,574		
Pintail	8	8	8	8	330	764	470	124	18,592		
Green-winged teal	134	134	134	134	2,320	1,920	2,700	830	77,588		
Blue-winged teal	1,892	1,892	1,892	5,408	14,060	20,464	16,764	12,310	686,182	35	3,516
Cinnamon teal											
Shoveler	76	76	76	210	470	760	470	508	52,066	1	134
Wood					30	140	70		1,680		
Redhead	1,244	1,244	1,244	2,448	40	300	340	60	117,586	14	1,204
Ring-necked	562	562	562	962	250	370	190	360	65,534	6	400
Canvasback	216	216	216	752	80	90	60	50	30,464	8	536
Scaup	774	774	774	1,042	90	10	20	190	147,224	4	268
Goldeneye									490		
Bufflehead									8,330		
Ruddy	580	580	580	1,182	20	80	250	120	63,294	6	602
Other C. Merganser									70		
~~Other~~ H. Merganser						40		40	560		
Total Ducks	7,668	7,668	7,668	20,988	28,590	43,346	35,190	33,154	1,987,426	153	13,320
Coots:	4,874	4,874	4,874	13,647	3,220	1,990	5,980	6,790	929,229	-	8,773

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	42	6	0
Geese	43,323	500	155
Ducks	1,987,426	43,346	13,320
Coots	929,229	23,580	8,773

SUMMARY

Principal feeding areas Agassiz, Green Stump, Headquarters, Mud River, Tamarack, and Thief Bay Pools.

Principal nesting areas Agassiz, CCC, Green Stump, Thief Bay, and Webster Pools.

Reported by Jay R. Bellinger, Assistant Refuge Mgr.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Agassiz Months of May to August 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common loon	1	5/9	5	5/10	1	5/11	Spring migrant			
Red-necked grebe	10	5/12	17	8/18	15	8/25	Summer resident			
Horned grebe	32	5/5	37	5/12	10	8/11	"	"		
Eared grebe	10	5/12	4	7/3	4	7/3	"	"		
Western grebe	12	5/12	12	5/12	2	8/25	"	"		
Pied-billed grebe	70	5/31	70	5/31			"	"		
White pelican	6	5/5	406	8/18			"	"		
Double-crested cormorant	19	5/12	42	8/25			"	"		
Great blue heron	42	5/12	42	5/12			"	"		
Common egret	2	5/24	-	-			Rare visitor			
Black-Cr. night heron	47	5/12	47	5/12	8	8/25	Summer resident			
American bittern	1	5/12	9	8/18			Summer resident			
Sandhill crane	2	5/23	6	8/23			Spring & fall migrant			
Virginia rail	1	8/26	-	-			Summer resident			
Sora rail	4	7/23	-	-			"	"		
II. Shorebirds, Gulls and Terns:										
Semipalmated plover	5	8/11	5	8/11			Fall migrant			
Killdeer	1	5/1	7	8/11			Summer resident			
Am. golden plover	5	5/23	5	5/23			Fall migrant			
Black-bellied plover	25	5/23	25	5/23			Spring & fall migrant			
Common snipe	25	7/25	49	8/11			Summer resident			
Spotted sandpiper	8	5/12	50	5/23			"	"		
Solitary sandpiper	2	5/12					Spring & fall migrant			
Willet	5	5/15	5	5/15			Accidental visitor			
Greater yellowlegs	3	5/12	100's	8/11			Spring & fall migrant			
Lesser yellowlegs	1	5/23	1000's	8/11			Spring & fall migrant			
Pectoral sandpiper	25	7/23					Spring & fall migrant			
Baird's sandpiper	100's	8/11	100's	8/11			Spring & fall migrant			
Least sandpiper	3	5/23					Spring & fall migrant			

(See continued NR-1A)

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove			37	8/18			Summer resident	
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk	1	5/9	2	5/12	2	5/20	Spring & fall migrant	
Horned owl	1	6/26					Permanent resident	
Magpie	3	8/22					Winter resident	
Raven								
Crow	3	5/12	4	8/25			Summer resident	
Cooper's hawk	1	6/20					Summer resident	
Red-tailed hawk	4	8/11	9	8/18			Summer resident	
Broad-winged hawk	1	5/26					Summer resident	
Rough-legged hawk							Spring & fall migrant	
Marsh hawk	6	5/5	12	8/25			Summer resident	
Sparrow hawk	4	8/27					Summer resident	
Short-eared owl	1	7/17						

Reported by Jay R. Bellinger, Ass't. Refuge Mgr

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D C. 36104

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Agassiz Months of May to August 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
II. Shorebirds, Gulls and Terns:										
(Continuation of NR-1A)										
Long-billed dowitcher	3	7/23	50	8/18						Spring and fall migrant
Semipalmated sandpiper	100's	8/11	1000's	8/18						Spring & fall migrant
Marbled godwit	5	5/23	7	7/13						Summer resident
Wilson's phalarope	1	5/12	5	7/23						Summer resident
Herring gull	1	5/1								Spring migrant
Ring-billed gull	3	5/12								Spring & fall migrant
Franklin's gull			250,000 to 350,000	7/24						Summer resident
Forester's tern			100's	8/24 est.						Summer resident
Common tern			100's	8/24 est.						Summer resident
Black tern	1	5/12	500	-						Summer resident

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove					
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow					

Reported by.....

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C. 36104

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Agassiz — For 12-month period ending August 31, 1967

Reported by Jay R. Bellinger — Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
(1) Tamarack	Crops	-	Ducks	667,435	374	650
	Upland	45	Geese	5,467	10	12
	Marsh	1,510	Swans	-	-	-
	Water	480	Coots	76,552	236	425
	Total	2,035	Total	749,454	620	1,087
(2) Thief Bay	Crops	-	Ducks	238,466	580	1,007
	Upland	1,062	Geese	6,097	18	23
	Marsh	1,672	Swans	126	-	-
	Water	960	Coots	61,341	365	663
	Total	1,394	Total	306,030	963	1,693
(3) Whiskey Lake	Crops	-	Ducks	48,328	542	942
	Upland	4,322	Geese	-	-	-
	Marsh	577	Swans	-	-	-
	Water	196	Coots	-	-	-
	Total	5,095	Total	48,328	542	942
(4) Northwest	Crops	-	Ducks	229,404	299	519
	Upland	297	Geese	6,475	6	8
	Marsh	1,689	Swans	-	-	-
	Water	254	Coots	91,651	130	233
	Total	2,240	Total	327,530	435	760
(5) Webster	Crops	-	Ducks	207,379	617	1,072
	Upland	355	Geese	2,933	12	15
	Marsh	880	Swans	14	-	-
	Water	365	Coots	32,858	26	48
	Total	1,600	Total	243,184	655	1,135
(6) Mud River	Crops	-	Ducks	289,927	580	1,007
	Upland	1,732	Geese	3,290	6	8
	Marsh	225	Swans	133	-	-
	Water	140	Coots	66,250	-	-
	Total	2,097	Total	359,600	586	1,015
(7) Kelly	Crops	-	Ducks	139,113	262	454
	Upland	2,940	Geese	4,081	4	5
	Marsh	344	Swans	-	-	-
	Water	36	Coots	14,728	26	48
	Total	3,320	Total	157,922	292	507

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form MR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27589

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Agassiz — For 12-month period ending August 31, 1967

Reported by Jay R. Bellinger — Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
(8) Agassiz	Crops	235	Ducks	1,024,561	1,235	2,145
	Upland	790	Geese	29,988	40	50
	Marsh	3,800	Swans	903	-	-
	Water	9,800	Coots	616,578	2,359	4,245
	Total	14,625	Total	1,672,030	3,634	6,440
(9) CCC	Crops	400	Ducks	270,427	860	1,495
	Upland	3,560	Geese	45,276	6	8
	Marsh	3,560	Swans	-	-	-
	Water	520	Coots	11,809	53	94
	Total	8,040	Total	327,512	919	1,597
(10) Madsen	Crops	-	Ducks	428,932	94	163
	Upland	130	Geese	5,019	-	-
	Marsh	378	Swans	77	-	-
	Water	1,470	Coots	172,928	341	613
	Total	1,978	Total	606,956	435	776
(11) Davidson	Crops	65	Ducks	32,318	38	65
	Upland	927	Geese	-	-	-
	Marsh	228	Swans	-	-	-
	Water	2	Coots	33,390	-	-
	Total	1,222	Total	65,708	38	65
(12) Green Stump	Crops	-	Ducks	853,145	1,010	1,754
	Upland	82	Geese	8,638	4	5
	Marsh	1,260	Swans	-	-	-
	Water	1,805	Coots	296,037	1,101	1,980
	Total	3,147	Total	1,157,820	2,115	3,739
(13) Headquarters	Crops	-	Ducks	287,685	75	131
	Upland	208	Geese	2,583	4	5
	Marsh	407	Swans	119	0	0
	Water	685	Coots	169,991	105	188
	Total	1,300	Total	460,378	184	324
(14) Lost Bay	Crops	131	Ducks	162,738	299	520
	Upland	1,270	Geese	3,066	-	-
	Marsh	720	Swans	-	-	-
	Water	90	Coots	10,589	53	94
	Total	2,211	Total	176,393	352	614

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form MR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27500

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Agassiz — For 12-month period ending August 31, 1967

Reported by Jay R. Bellinger — Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
(15) Dahl	Crops	150	Ducks	78,904	355	617
	Upland	1,120	Geese	679	4	5
	Marsh	340	Swans	-	-	-
	Water	70	Coots	4,998	26	48
	Total	1,680	Total	84,581	385	670
(16) South	Crops	-	Ducks	169,581	18	32
	Upland	18	Geese	3,514	8	11
	Marsh	800	Swans	-	-	-
	Water	200	Coots	29,540	-	-
	Total	1,018	Total	202,635	26	43
(17) Lost River	Crops	120	Ducks	5,931	-	-
	Upland	2,710	Geese	3,696	-	-
	Marsh	630	Swans	-	-	-
	Water	60	Coots	-	-	-
	Total	3,520	Total	9,627	-	-
(18) Hunt	Crops	-	Ducks	47,172	430	747
	Upland	1,937	Geese	4,592	-	-
	Marsh	200	Swans	-	-	-
	Water	50	Coots	4,739	53	94
	Total	2,187	Total	56,503	483	841
TOTALS	Crops	1,101	Ducks	5,181,446	7,668	13,320
	Upland	23,505	Geese	135,394	122	155
	Marsh	19,220	Swans	1,372	-	-
	Water	17,183	Coots	1,693,979	4,874	8,773
	Total	61,009	Total	7,012,191	12,664	22,248
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

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(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form MR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Productions:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form 3-2
(April 1946)

UPLAND GAME BIRDS

Refuge Agassiz Months of May to August, 1967

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) * Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed grouse	Unknown	-	2	25	-	0	0	0	Unknown	27 birds sighted and approx. 15 heard during drumming count.
Sharp-tailed grouse	"	-	-	-	-	0	0	0	"	None sighted during the period.
Grey partridge	"	-	-	-	-	0	0	0	"	None known to be on the refuge at present.
Ring-necked pheasant	"	-	-	-	-	0	0	0	"	None known to be on the refuge at present.

* Population estimates have not been made as no census techniques have been adopted for the area. It appears that ruffed and sharp-tailed grouse populations correspond with low population levels on hunted areas outside of the refuge.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

17059

3-1750
Form NB
(Rev. [illegible]ch 1953)

W[illegible]TERFOWL

REFUGE Agassiz

MONTHS OF ~~September~~ TO ~~December~~, 19 ~~47~~

(1) Species	September Weeks of (2) reporting period 3-9	10-16	17-23	24-30	October 1-7	8-14	15-21	22-28	November 29-4	5-11
Swans:										
Whistling				3	2	8	25	250		
Trumpeter										
Geese:										
Canada	500	500	733	3,745	5,003	1,288	531	254	90	
Cackling			1							
Brant										
White-fronted										
Snow				504	132	2085	883			
Blue				126	49	495	376	1		
Other Total Geese:	500	500	734	4,375	5,184	4,2[illegible]	1,790	255	80	
Ducks:										
Mallard	12,410	24,920	22,290	14,380	15,840	7,720	2,050	3,190	2,010	
Black	74	90	30	20	20	20	30	10		
Gadwall	5,980	30,630	15,570	16,270	24,930	16,350	4,090	280		
Baldpate	1,986	1,350	1,660	2,260	260	290	740	180	10	
Pintail	492	210	380	340	620	330	360			
Green-winged teal	980	5,170	8,570	4,440	3,840	3,340	760	1,800	40	
Blue-winged teal	7,020	6,540	3,960	890	360	70	40			
Cinnamon teal										
Shoveler	270	240	140	90	310	240	100	50		
Wood	30	500	100	10						
Redhead	210	340	50	160	280	260	90	150	70	
Ring-necked	100	150	50	50	320	340	120	110		
Canvasback	30	20	80	30						
Scaup	210	60	30	70	20	1,080	740	40	500	
Goldeneye										
Bufflehead				20			30	80		
Ruddy	60	70		50	10	300	100	10		
Other C. merganser									20	
" H. "		100		50		40	10			
Total Ducks:	29,862	70,450	52,910	39,440	46,810	30,390	14,370	5,900	2,150	
Coot:	4,670	9,720	9,320	8,690	6,380	870	100	20		

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cont'd-1
(Rev. March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Agassiz MONTHS OF September TO December, 19 67

(1) Species	(2) Weeks of reporting period: November 12-18 / 11; 19-25 / 12; 26-2 / 13; 3-9 / 14; December 10-16 / 15; 17-23 / 16; 24-30 / 17; 18	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:				
Whistling		2,051		
Trumpeter				
Geese:				
Canada		88,438		
Cackling		7		
Brant				
White-fronted				
Snow		25,228		
Blue		10,136		
Other				
Ducks:				
Mallard		768,670		
Black		2,058		
Gadwall		802,200		
Baldpate		61,152		
Pintail		18,424		
Green-winged teal		202,650		
Blue-winged teal		131,530		
Cinnamon teal				
Shoveler		10,080		
Wood		4,900		
Redhead		11,270		
Ring-necked		9,030		
Canvasback		1,120		
Scaup		19,250		
Goldeneye				
Bufflehead		910		
Ruddy		4,630		
Other C. merganser		140		
Coots: H. "		1,400		
Coots:		278,390		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	~~2,051~~	~~250~~	
Geese	~~123,809~~	~~5,184~~	
Ducks	~~2,049,404~~	~~90,450~~	
Coots	~~278,399~~	~~9,720~~	

SUMMARY

Principal feeding areas ~~Refuge grain fields and Tamarack Pool were most attractive to dabblers & geese with Webster~~ Pool being the most important feeding ~~area for divers & coots.~~

Principal nesting areas

Reported by ~~J.H. Bellinger, Res't. Mgr.~~

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Agassiz Months of September to December 195 67

(1) Species		(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I.	Water and Marsh Birds:										
	Red-necked grebe	summer	resident	4	9/8	1	10/20				
	Western grebe	"	"	-	-	-	-				
	Pied-billed grebe	"	"	20	9/8	-	-				
	White pelican	"	"	350	9/29	1	10/13				
	Double-crested cormorant	"	"	43	9/21	3	10/24				
	Great blue heron	"	"	32	9/29	1	11/3				
	Common egret	1	9/30	-	-	-	-				
	Bl.-cr. night heron	summer	resident	26	9/1	1	10/27				
	American bittern	"	"	11	9/1	1	10/13				
	Sandhill crane	8	9/2	666	10/1	1	10/13				
	Sora rail	summer	resident	-	-	-	-				
II.	Shorebirds, Gulls and Terns:										
	Semi-palmated plover	1	9/29	-	-	-	-				
	Killdeer	summer	resident	20	9/8	2	9/29				
	Black-bellied plover	1	9/29	-	-	-	-				
	Common snipe	60	9/1	60	9/1	2	10/27				
	Greater yellowlegs	4	9/1	50	10/6	10	11/3				
	Lesser yellowlegs	6	9/1	50	10/6	16	10/27				
	Pectoral sandpiper	18	10/6	-	-	-	-				
	Long-billed dowitcher	45	9/15	45	9/15	40	9/29				
	Marbled godwit	2	9/1	-	-	-	-				
	Wilson's phalarope	4	9/15	-	-	-	-				
	Ring-billed gull	6	9/29	11	10/20	1	10/27				
	Franklin's gull	summer	resident	100's	9/1	-	-				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	summer	resident	17	9/15	2	10/6		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	9/30	2	11/3	winter	resident		
Duck hawk	-	-	-	-	-	-		
Horned owl	permanent	resident	1	10/20	-	-		
Magpie	1	9/22	76	10/20	winter	resident		
Raven	2	9/15	-	-	"	"		
Crow	summer	resident	23	9/20	4	9/29		
Bald eagle	4	10/22	4	10/22	1	11/3		
Sharp-shinned hawk	1	10/13	-	-	1	10/27		
Cooper's hawk	1	9/18	-	-	-	-		
Red-tailed hawk	summer	resident	5	9/15	3	9/22		
Rough-legged hawk	1	9/30	8	10/27	3	12/10		
Marsh hawk	summer	resident	12	9/1	2	10/27		
Snowy owl	1	11/15	-	-	winter	visitor		
Short-eared owl	1	10/7	5	10/10	3	12/6		

Reported by J.R. Bellinger, Asc't. Mgr.

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C. 36104

3-1752
Form 2
(April 1946)

UPLAND GAME BIRDS

Refuge Agassiz Months of September to December, 19 47

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) *Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed grouse	Unknown	-	-	-	-	-	-	-	Unknown	30 birds were sighted during this period.
Sharp-tailed grouse	"	-	-	-	-	-	-	-	"	Nine birds sighted during this period.
Grey partridge	"	-	-	-	-	-	-	-	"	Seven birds sighted during this period.
Ring-necked pheasant	"	-	-	-	-	-	-	-	"	None known to be present on the refuge.

* Refuge populations appear to correspond with population levels on hunted areas outside of the refuge.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-175
Form 9-R-3
(June 1945)

BIG GAME

Refuge Agassiz Calendar Year 1967

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed deer	30,000 acres of willow, dogwood and aspen. February aerial survey censused 806 animals	* 403	438	-	-	-	-	-	-	-	-	1,209	771	-
Moose	30,000 acres of willow, dogwood and aspen. February aerial survey censused 184 animals.	42	-	-	-	-	-	-	-	-	-	184	182	-

Remarks: * Assuming sex ratio is 1:1 and each doe produces 1.0 fawns.

Reported by J.B. Bellinger, Ass't. Mgr.

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

17060

3-1755
Form 1-5
607

DISEASE

Refuge Agassiz Year 19 67

Botulism

Period of outbreak None recorded this year.

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease None recorded this year.

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Agassis

Calendar Year 1967

1. Visits

a. Hunting 1884 b. Fishing None c. Miscellaneous 12000 d. TOTAL VISITS 13,884

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	None		
Upland Game	None		
Big Game	1,884	61,000	Bureau
Other	None		

Number of permanent blinds None

Man-days of bow hunting included above None

Estimated man-days of hunting on lands adjacent to refuge Waterfowl-6000, deer-1200, upland game and other small mammals-100. TOTAL 7300

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	None	
Streams and Shores		None

1c. Miscellaneous Visits

Recreation 13,884 Official 900

Economic Use 150 Industrial None

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge NO. OF GROUPS	On Refuge NUMBER IN GROUPS	Off Refuge NO. OF GROUPS	Off Refuge NUMBER IN GROUPS
Sportsmen Clubs			6	442
Bird and Garden Clubs			1	20
Schools	12	331	20	4,012
Service Clubs				
Youth Groups	1	16	1	25
Professional-Scientific				
Religious Groups	1	25	1	30
State or Federal Govt.				
Other Rotary Club			1	40
Depredation Committee			2	40

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	8	Radio Presentations	11
Newspapers (P.R.'s sent to)	28	Exhibits	2
TV Presentations	None	Est. Exhibit Viewers	4,500

3-1756
(Rev. 4/63)

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

3-1757
Form NR-1
(Rev.June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS (1)

Refuge [redacted] Year 1967

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
None this period.													

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: _____

3-1758
Form NR-
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Agassiz County Marshall State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn					19	475 bu.	19	Winter wheat	44
Oats			140	4800 bu.			140	Alfalfa	18
Barley			80	2400 bu.			80		
								Fallow Ag. Land	381

No. of Permittees: Agricultural Operations One Haying Operations One Grazing Operations Ten

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Tame	233	165	-	1. Cattle	913	2,605.61	$2,605.61	4,405
				2. Other				
				1. Total Refuge Acreage Under Cultivation				689
Hay - Wild				2. Acreage Cultivated as Service Operation				547

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C.91767

8-1570
NR-SR
(4/54)

REFUGE GRAIN REPORT

Refuge Agassiz Months of January through December, 1967

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Wheat	0	100	100	0	100	0	100	0	0	0	0
Barly	1,000	3,298	4,298	0	118	1,780	1,898	2,400	0	2,400	0
Oats	1,200	5,139	6,339	0	339	1,200	1,539	4,800	0	4,800	0
Corn	750	932	1,682	0	7	500	507	1,175	0	1,175	0

(8) Indicate shipping or collection points Thief River Falls, Minnesota.

(9) Grain is stored at Headquarters granary.

(10) Remarks Received: 750 bushels of corn from Tewaukon Refuge, 100 bushels of wheat and 175 bushels of corn from Desota Refuge and 780 bushels of barley from Arrowwood Refuge.

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.–DEP. SEC., WASH., D.C. 17065

3-1761
Form NR-
(2/46)

TIMBER REMOVAL

Refuge ~~Agassiz~~ Year 1967

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
No timber removed this period.								

Total acreage cut over..... Total income.....

No. of units removed B. F..... Method of slash disposal.....
Cords.....
Ties.....
.....

INT.-DUP. SEC., WASH., D.C. 36103

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Agassiz

Proposal Number: 1 and 2

Reporting Year: 1967

INSTRUCTIONS: Wildlife Refuges Manual, secs, 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) June 23	Leafy spurge	Grazing Unit G-18	.5	Tordon 22K	5 lbs.	10 lbs./A	Water, 6lbs 4oz. per 100gal.	Hand spray
(2) July 6	Common mustard, Canada thistle, Sow thistle and Morning glory	Ag. units A-3, A-4, and A-6.	235	2-4-d	111.2 lbs.	½ lb. a.i/A	Water with detergent. 10gal/A	Aerial

10. Summary of results (continue on reverse side, if necessary)

No.	First Rainfall	First obs.	First Effects Noted	Character of Symptoms	% Kill Examination	Follow up & % Regrowth	Cost of Chemicals & Appl
(1)	6/26 .02"	6/26	6/25-26	Leaves wilted and dis-colored	7/11 75%	8/25 10%	$ 35.00
(2)	7/7 .07"	7/11	7/7-8	" " " "	7/15 85%	7/20 10%	$258.50@$1.10/A
						TOTAL	$293.50

35500

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

Author: J. R. Bellinger
Phone: 449-2110

BUREAU OF SPORT FISHERIES & WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For release February 17, 1967 p.m.

RESULTS OF 1966 GOOSE HUNT NEAR AGASSIZ REFUGE

A nine day goose harvest survey was again conducted last fall over 119 square miles of hunting territory adjacent to the Agassiz National Wildlife Refuge.

This study revealed that approximately 4,547 hunters bagged 588 geese and crippled and lost 189 for a total kill of 777 geese. This represented a drop of 26 percent from the 1965 kill of 1,051 geese.

The decrease in total kill from 1965 may be attributed to various causes. One of these was the reduced number of blue and snow geese that used the refuge as a stop-over point during last fall's migration. Only 7 blues and snows were taken last fall as compared to 271 in 1965. In addition, fewer hunters visited the area in 1966 as compared to 1965. Approximately 11.6 hunters were observed per square mile of survey area on opening day last fall. This represented a drop of 38.6 percent from the previous year's figure of 18.9 individuals per square mile.

A check of issuance points for a sample of 935 hunter car licenses revealed that 70 percent of the hunting parties were from northwestern Minnesota. Approximately 45 to 50 percent of these were from the Thief River Falls area. Only 14.7 percent drove north from the St. Paul, Minneapolis metropoliton area. These figures show that we are not dealing with the "big city hunter" to the extent that many people think.

(more)

Extensive "posting" of private lands forced the majority of hunters to take position along refuge boundary "firing lines". This increasing restriction of hunting areas that are available to the average sportsmen is creating many more problems for the waterfowl hunter and manager alike.

It is recognized that qualitive values of the hunt are reduced or destroyed by over-crowding on a hunting area, excessive regimentation, removing the element of uncertainty and suspense, making things too easy for the hunter, and unsportsman like conduct.

It must be realized by all conderned that the waterfowl resource is limited. Demand far exceeds the supply. This will necessitate greater efforts by management to provide quality hunting in as near a natural setting as possible. At the same time, sportsmen will have to practice greater self-restraint (the most difficult of all virtures) in the pursuit of their sport, and will have to cultivate better sportsmen-farmer relations. This cannot be accomplished by violation of the trespass law, destruction of private property, littering on public and private hunting grounds, and severe competition for a desired bird. The future of wild-fowling as we have known it will depend on how well we can find cooperative soulutions to the difficult human relations problems.

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

Author: J. R. Bellinger
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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For release February 24, 1967 p.m.

AGASSIZ REFUGE DEER HUNT

Approximately 870 hunters bagged 296 deer during the five day hunting season on the Agassiz National Wildlife Refuge last fall. This represents a hunting success of 34 percent.

The total harvest was up from 1965 when 188 deer were taken. Factors that contributed to the increased kill are as follows: Plenty of deer on the area due to high quality wintering habitat; good to excellent weather conditions throughout the season with ample tracking snow; and low water levels and safe ice conditions which permitted widespread hunter access to the deer hunting grounds.

Several trophy bucks were again bagged on the refuge. The kill also included a high percentage of fawns, (47 percent). This is a good indication that the refuge herd was not severely affected by the blizzard of last March.

The chaining-off of many refuge trails offered hunters a wide range of hunting opportunities. Those interested in doing little walking, as well as those who wanted to walk back and get away from the crowd, were given consideration before this action was taken.

The use of snowmobiles to transport hunters to and from their favored hunting areas was not permitted. This added to the quality of the hunt in that neither the deer not the hunters were disturbed by noisy "snowsleds" destroying the tranquility of the woods.

(more)

Qualitive values of the hunt are to be stressed more in the future. Such values are enhanced by reasonable solitude, attractive natural surroundings, suspense and excitement, the chance of using skill in obtaining a trophy, and rugged excercise.

The hunters who participated in the refuge deer hunt are to be commended for their generally good behavior. No violations or hunting accidents were reported, and only one moose was reported killed. The refuge staff was rewarded in its attempts to reduce littering of the natural landscape by cooperative hunters who, for the most part, took their litter home.

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For Release to P. M. of March 14, 1967

AGASSIZ DEER HERD SHOWS INCREASE

The annual census of moose and deer on Agassiz National Wildlife Refuge and adjacent state wildlife management areas was conducted on February 27 this year.

The survey yielded a population figure of 806 deer for the approximately 127 square miles of survey area. This represented a 17.5 percent increase over last year's total of 686 deer.

The refuge moose herd appears to be about the same size as one year ago. The aerial survey recorded 134 animals this year as compared with 188 in 1966.

The insignificant change in the moose population figures between the two years dramatizes the mobility of these animals expected with a highly mobil species. Moose move freely between attractive feeding areas either on or off the refuge, and are not restiricted to any extent by our annual snowfall.

The following table shows a comparison between moose and deer population figures for the past five years.

Year	Deer	Moose
1963	520	136
1964	522	140
1965	624	128
1966	680	188
1967	806	184

(More)

All but a very few of the deer and moose sighted during the census appeared to be in excellent physical condition, and were experiencing little difficulty in moving through the deep, but soft snow.

Precluding severe weather between now and spring break-up, it is believed that only minimal winter deer losses will occur this year.

Transects were flown at one-half mile intervals with recorded sightings confined to within one-eighth mile of either side of the aircraft. This provided a 50 percent coverage of the survey area.

The number of animals actually recorded was then doubled to arrive at the total population figure.

This census method provides highly reliable population data within the vegetative cover types found at Agassiz. Animals are readily observed within the open brush and hardwood timber stands where evergreen cover make aerial observation the most appropriate survey mehtod.

Incidental to the main objective of the census was an effort to record sightings of other animals which must be given consideration in the management of big game.

Although a limited number of coyotes are known to be present on the refuge lands, none were sighted during the flight. Two red fox were the only predators actually seen. No timber wolves have been sighted on the refuge in recent years.

Predation is one of nature's chief means of controlling snowshoe hare and rodent populations. This control is necessary if these animals are to be prevented from over-expliting their available food supplies. In addition, snowshoes, when abundant, are known to compete with big game for available winter browse. Therefore, it is often desirable to maintain a limited predator population on wildlife management areas to prevent hare and rodent populations from reaching excessive levels, and to provide

(More)

a representive number of these unique animals for the enjoyment of the public.

Predators are recognized as a valuable part of the total ecological picture in any natural community. Therefore, only when their numbers become large enought to cause conflict with livestock interests, or to result in severe stress being placed on desirable game populations, is control warranted on a managed wildlife area such as Agassiz Refuge

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For Release to P.M. of March 16, 1967

NATIONAL WILDLIFE WEEK HIGHLIGHTS PUBLIC LANDS

Agassiz National Wildlife Refuge is joining with the National Wildlife Federation in observing National Wildlife Week, March 19-25.

This annual conservation project is planned each year to include the first day of spring, and the original proclamation was signed by President Franklin D. Roosevelt in 1938. The observance has provided Americans with a yearly reminder of the need for natural resource conservation.

"This is Your Land" will be the theme for 1967, and will continue to be promoted for the remainder of the year. Every citizen is to be reminded that he or she is a part owner of local, state and federal public lands. Since the public lands belong to them, they have a responsibility for seeing that they are managed wisely for the benefit of this and future generations. "This means working with public and private organizations as well as public officials to insure that we receive the maximum benefits from our public lands."

Although land and water management for ducks, geese and swans are the primary concern of management at Agassiz, this unique refuge has also been dedicated to better public understanding and appreciation of wild places and wild things. This is accomplished by supporting and encouraging

(More)

nature-orientated conservation education programs, insofar as such human activity will not jeopardize the attainment of wildlife management goals.

The refuge has much to offer the public in the way of impressive waterfowl concentrations, variety of other migratory birds, white-tailed deer, moose, and interesting wildlands.

From a biological view, the refuge is virtually a living museum of native plant and animal communities found in a relatively natural state which can, if properly protected and preserved, serve the educational needs of this and future generations.

Often we do not feel capable of controlling the crowds and the speeds and the costs of todays living. Tomorrow will not find us much better equipped for reining in these forces. Yet, we are capable of insuring space to get out-of-doors and refresh ourselves so that we may better cope with modern life.

When citizens are reminded that "THIS IS YOUR LAND", it is a challenge to each of us - - for our own good - - to learn about, protect and enjoy our vital public lands.

About one-fifth of the total land area of the United States is in public ownership. This land begins with the local parks and playgrounds and includes state forests, parks and wildlife refuges.

Many of these lands can and should be devoted to quality recreational use. There are others, however, that are not suitable for intensive development for recreation, heavy use or, in some cases, any use at all. These are the "special-care" lands.

Special care must be given to game preserves and wildlife refuges which need to be carefully managed if they are to provide a haven for animal life. The majority of wildlife species require a certain degree

(More)

of seclusion, particularly during the season when they are raising their young, if they are to survive. This often means that disturbance by humans must be prevented to the greatest extent possible.

Agassiz National Wildlife Refuge located in eastern Marshall County, represents one of the types of special care lands. The area has been dedicated to the preservation of this countrie's wildlife resource.

The goal of the national wildlife refuge system is to further the development of a national program of fish and wildlife conservation by restoring, developing and managing land and habitat for migratory birds and other species of fish and wildlife for the maximum production, perpetuation, utilization and public enjoyment inherent in the fish, wildlife, land and water resources of the system.

NATIONAL WILDLIFE WEEK EDUCATIONAL PROGRAM

The staff at Agassiz National Wildlife Refuge will be presenting National Wildlife Week programs at the following area schools: Thief River Falls Schools: Lincoln High School; Thief River Falls Junior College; Knox; Mark Twain; Washington and Northrup Elementary Schools. Ohter area schools including those at Holt, Gatske, Grygla, Middle River, Kalstad, Newfolden, Goodridge, Viking, and Warren.

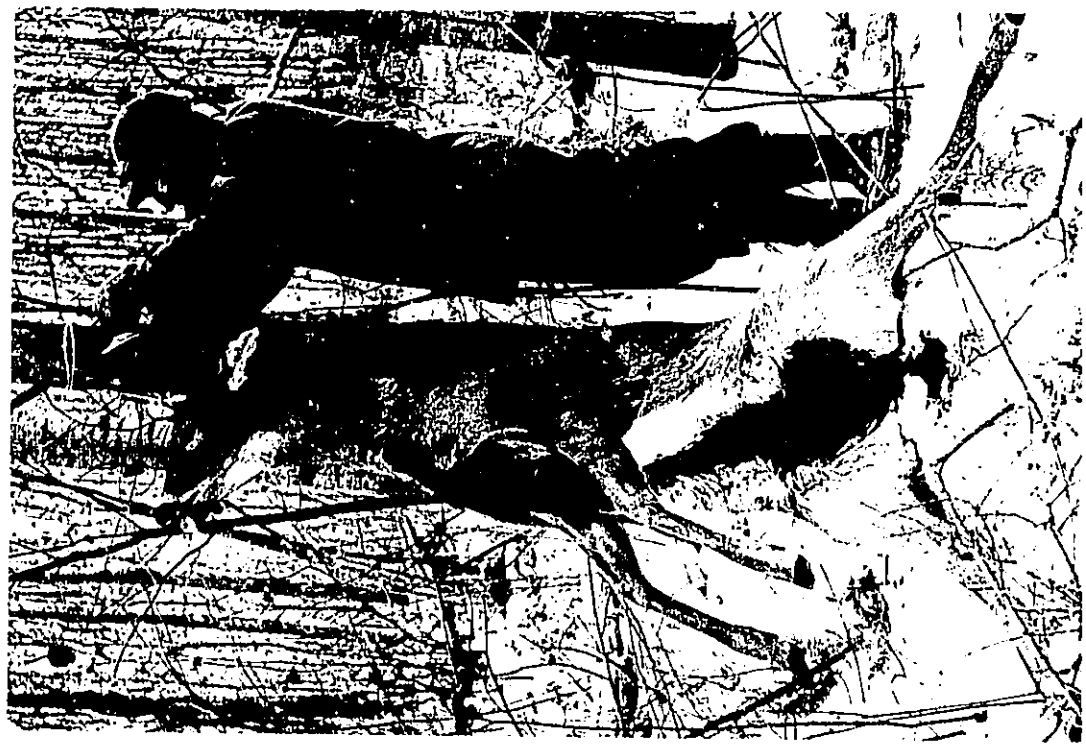
I addition, a cooperative educational display will be available for viewing by all interested citizens at the Thief River Falls Public Library, during National Wildlife Week, March 19-25. The display will include pictures of wildlife, nounted wildlife specimens, and an extensive selection of various books, leaflets and brochures on resource conservation that are available to the citezen interested in becoming better informed about the wise use and management of our natural resources.

(More)

All local citizens are encouraged to stop in at our fine new public library to view this display and examine the wide range of educational materials that are available for their use.

Numerous educational groups such as these high school biology teachers visit Agassiz Refuge each year to learn more about conservation in action. Such groups are always welcome, and time is willingly taken by members of the refuge staff to demonstrate and explain various management practices employed to better provide for the needs of wildlife.

School classes from the elementary to college level are richly rewarded by their many exciting educational experiences while on conducted tours of the refuge. Approximately 234 species of birds have been identified on the area since its inception in 1937. A view of one of the more unusual of these species rewarded these observant college students and their instructor.



Another way in which the refuge provided for the needs of people is by providing hunting opportunities either on, or adjacent to, the refuge. The white-tailed deer is one game species which can be harvested on a sustained yield basis. This helps to keep the herd within the carrying capacity of its range while providing healthy recreation to many outdoorsmen.

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For Release to PM's, April 25, 1967

WATERFOWL RETURN TO AGASSIZ REFUGE

Despite the recent spell of adverse weather, waterfowl numbers have been increasing daily at Agassiz National Wildlife Refuge in eastern Marshall County.

A warm front accompanied by gusty southerly winds encouraged the first ducks to return to Agassiz on March 29. It is typical for the earliest migrants to venture north with the retreating ice during the last week or two in March. April is the month when ducks and geese move north to their ancestral breeding grounds in greatest numbers, however, In 1966, 71,000 ducks were counted on the refuge April 29.

Among the earliest arrivals sighted were American goldeneyes, mallards, pintails and American mergansers. These birds are traditionally early migrants. Such species as the lesser scaup, green-winged teal, shoveler, wood duck, ringneck and hooded merganser arrived soon afterwards.

The blue-winged teal, canvasback and redhead generally delay their flight north until the weather becomes more favorable. The cautious ruddy duck appears to be most familiar with spring weather in northern Minnesota, for he generally waits until late April before making his appearance.

(More)

It is expected that approximately 8,000 ducks will remain to nest on the refuge during the upcoming breeding season. These birds will produce in the neighborhood of 17,000 ducklings. The hardy mallard has already begun to nest despite the weather.

The first Canada geese were sighted on March 27. By the 29 a flock of 30 had arrived. These early arrivals were believed to have been members of the resident flock of approximately 650 individuals which survived last fall's hunting season. About 200 of these birds have paired and are in the process of nesting.

A peak population of 2,500 to 3,000 migrant Canada geese visited Agassiz on April 4. These birds have since moved on north to their nesting grounds in the lowlands south and west of Hudson Bay.

It is typical that fewer geese stop at the refuge in the spring than in the fall. This is due primarily to the greater quantities of food that are availalbe to the birds during late September and early October.

Actually the first waterbird to visit the refuge this spring was a wayfaring American coot. This lone individual was seen on the yet snow covered refuge lawns March 22. It was postulated that the bird may have become confused during a nightime excursion flight further south. Coots generally migrate in flocks at night using the constellations for orientation.

Many people continue to thrill at the sight of waterfowl winging across stormy spring skies on their restless journey to ancestral breeding grounds on the continent's northern wetlands. Unfortunately, a large percentage of these age-old wetlands have been destroyed by the oftentimes ruthless hand of man. Hunter and non-hunter alike now

(More)

realize that if ducks and geese are to continue to add variety and beaty to their lives and to the lives of their children, then great individual effort must be made to save, preserve and restore the priceless breeding habitat that yet remains. The time is short but the rewards are great.

This cold footed American coot was the first waterbird to arrive at Agassiz Refuge this spring. It was sighted on the yet snow covered refuge lawns on March 22.

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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For Release to PM's, September 7, 1967

DUCK DEPREDATION CONTROL PROVES EFFECTIVE

A wide variety of measures are currently being taken by personnel at the Agassiz National Wildlife Refuge near Middle River to prevent duck depredations from occurring to grain crops on nearby private lands.

With the local grain harvest now in full swing, and with the continent's duck populations on the move south from northern breeding grounds, farmers and waterfowl managers alike are turning their eyes skyward to read signs of the weather. Signs of rain, especially of the prolonged variety, could mean a delayed harvest with the threat of ducks moving in to feed on the swathed grain.

Like all living creatures with whom man shares this planet, our waterfowl have certain basic needs which must be satisfied if they are to survive and reproduce. With ducks, shallow water and loafing areas near an available supply of acceptable food and cover are among the most vital of these needs.

Since ducks by nature are wild free-flying birds, they are prone to ignore lines arbitrarily drawn on a map by man to mark off the areas on which they should or should not be found. This, in conjunction with the fact that certain kinds of ducks, and particularly the mallard, have taken a liking to many of the grain crops grown by man, has sometimes resulted in a conflict of interests.

(more)

In years such as 1963, 1964 and 1965, when fall rains delayed the local grain harvest, flocks of field feeding mallards added to the farmers woes by moving in to forage on swathed grain which appeared to have been spread just for them. It is at times like this that the farmer, sportsman and waterfowl worker have had to be the most tolerant of each other's interests, and have had to cooperate most closely in seeking solutions to the problem.

Millions of American people have shown that they are vitally concerned about the survival of our wildlife heritage (which of course includes ducks) in this technical age. This concern has caused action to be taken at the local, state and national levels to guarantee that this is accomplished.

To this end, waterfowl managers have been assigned the difficult task of finding acceptable solutions to the many challenging problems which are threatening the very existence of representative numbers of waterfowl today. One of the most serious of these problems locally is the problem of duck depredations on private lands.

To date, wildlife personnel at Agassiz Refuge and [illegible] various state refuges have taken three basic approaches to the proble[illegible] i.e., (1) by providing technical assistance to the private landowner, (2) by supplementing natural duck foods through refuge farming programs, and (3) by establishing feeding sites at stratigically located on-refuge locations.

This fall as in past years, personnel at Agassiz have been maintaining daily vigil on the progress of the local grain harvest and on the feeding activities of ducks as they move into the area. This has demanded getting out at early and late hours to conduct surveillance patrols over a wide area. If and when duck problems are observed, or are reported by alert farmers, action is taken to assist the landowner to frighten the birds from threatened fields.

On the refuge itself, approximately 25,000 acres of water and marsh are currently being managed for the benefit of ducks and other native wildlife. These freshwater marshes supply many of the natural foods that ducks prefer. In addition, 600 acres of upland are being farmed for grain to supplement the supply of natural foods.

This year 260 acres of barley, oats and corn have been left in the fields in an effort to hold the majority of birds on the refuge. Once the threat of crop depredations has passed, these fields will be plowed to discourage use by birds during the fall hunting season since the refuge is closed to public hunting.

Last year 8,160 bushels of oats and barley were fed on seven feeding sites throughout the fall harvest season. Much of this grain was obtained from surplus stocks of the Commodity Credit Corporation with the remainder coming from croplands at Agassiz and other federal refuges.

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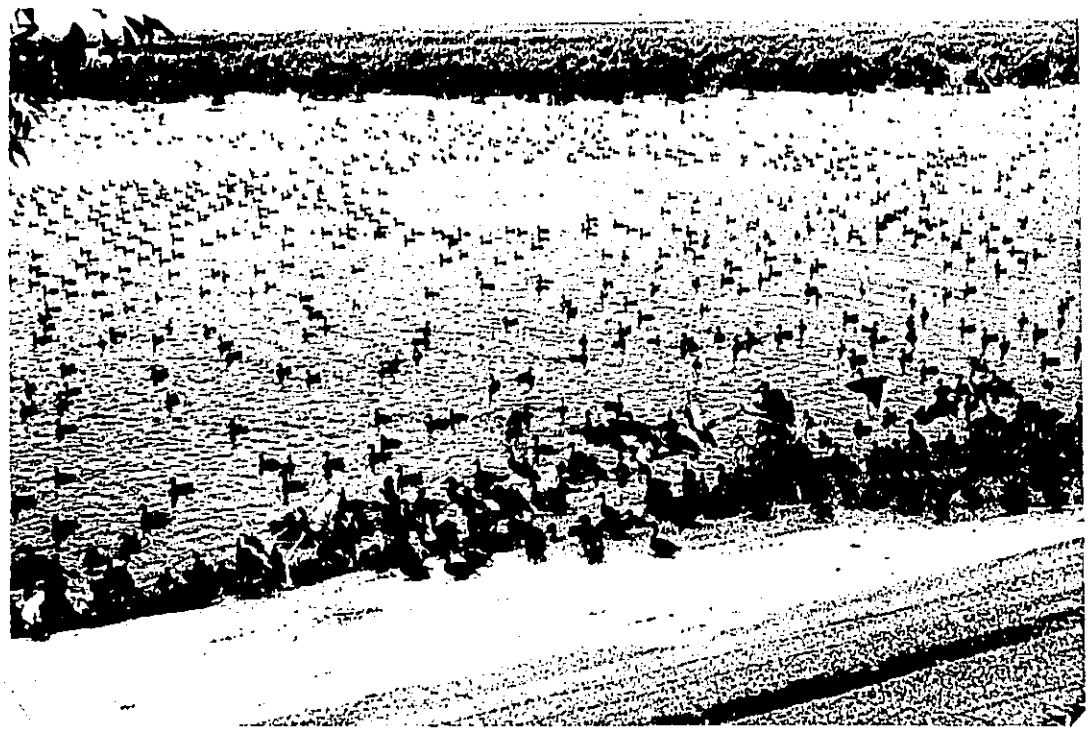
This feeding program is again being carried out at Agassiz with approximately 160 bushels of grain being spread on feeding sites daily. So far the birds have been satisfied with this free fare, and have not shown much inclination to fly to more distant feeding areas off the refuge.

Meanwhile, the local grain harvest is progresssing at a rapid rate with yields running good to excellent on most fields. With continued fair weather the crops should be safely in storage before many more days. Once this is accomplished farmers and waterfowl managers alike will have successfully passed a very crucial time in their work year. They along with other outdoor enthusiasts will then be better able to enjoy the many beauties of autumn of which myriad flocks of migrating ducks knifing across storm swept skies are such on intregal part.



This is one of five stratigically located feeding sites on Agassiz Refuge.

DEPARTMENT OF THE INTERIOR
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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For Release to PM's of September 13, 1967

FALL DUCK FLIGHTS HAVE COMMENCED

The annual southward movement of the continent's duck populations is now in progress according to Assistant Refuge Manager David R. Cline of the Agassiz National Wildlife Refuge near Middle River.

Weekly population censuses taken by refuge personnel have revealed a steady increase in duck numbers during August. The refuge duck population is expected to peak in early September. One year ago approximately 80,000 ducks were on the area on September 3.

The early migrating blue-winged teal is at present the most abundant duck on the refuge. However, the teal are extremely restless and soon will have vacated the area for their wintering grounds in Mexico, Central America and northern South America.

The wily mallard, favorite of the sportsman and being much more hardy than the teal, can be expected to linger in the area until the cold temperatures and snow of early November drive the last of them to more hospitable climes. Last fall a peak population of 25,000 to 30,000 mallards was present by the end of August. This year the number reached about 20,000 during this period.

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In addition to the blue-winged teal and mallard, other puddle ducks such as the pintail, gadwall, American widgeon and green-winged teal are also increasing in numbers daily. Diving ducks including the lesser scaup (bluebill), American goldeneye and buffle-head are among the last duck species to respond to the migration urge, and are not expected to reach peak numbers until mid-October.

A total of 16 different species of ducks can be found on the refuge marshes each fall. Each of these is distinctive in general appearance and in behavior characteristics. To the inquisitive and knowledgeable hunter or nature enthusiast, these wild fowl provide countless hours of enjoyment each year.

Biologists of the Department of Interior's Bureau of Sport Fisheries and Wildlife predict that North America's fall flight of major game ducks may be somewhat less than in 1966. A late season and deteriorating water conditions created a poor nesting situation on the northern prairie breeding grounds.

"Late reports from field biologists indicate poor nesting success as a result of spring storms that made this the latest season on record, followed by drouth conditions over widespread praitie nesting areas," stated John S. Gottschalk Bureau Director.

"The excellent habitat of May deteriorated rapidly in late June and July, and hopes for high renesting production vanished with the water."

At Agassiz, however, this year's duck production was considered good. A population of about 3,500 breeding pairs was believed to have produced approximately 16,000 ducklings to flight stage. This points up the vital importance of water to breeding ducks, for even in a drouth year like 1967 production can be maintained on managed marshes where it is possible to hold water at desired levels.

Although the prospects for this year's fall flight aren't as good now as they were earlier, local weather, water and food conditions can be expected to be the primary factors influencing local hunting opportunities when the Minnesota duck season opens at noon on October 7.

Regardless of how many birds are put in the bag, however, many hunters and non hunters alike will again be stimulated and refreshed by the "Grand Passage" of the continent's rich heritage of waterfowl.

There is much to be gained by those willing and patient enough to go afield and discover the ways in which various waterfowl respond to environmental stimuli just as they have for coutless ages past. What better way for man to establish and maintain a link with the primitive past and all its wonder and mystery.

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

FOR Release to PM's of October 4, 1967

MIGRANT GEESE ARRIVE AT AGASSIZ

The annual fall migration of geese is now in progress through the area according to wildlife workers at the Agassiz National Wildlife Refuge near Middle River.

On Wednesday, September 20, the first arrivals of Canada geese were sighted on the refuge. The following day several large flocks of more than 100 birds each put in their appearance. Many of these early arrivals are now on the refuge while others have continued south to other areas. Refuge records show that this annual influx of first migrants has occurred on practically the same date during the past several years.

The number of geese frequenting Agassiz is expected to increase daily this week as the birds continue to move down from the far North. By the opening of the hunting season on Sturday, from 5,000 to 10,000 should be on the area. The majority of these will be Canadas with only an occasional fleck of blues and snows expected.

Most hunters and bird enthusiasts realize that there is a great deal of variation in Canada geese. It is true that few North American

(More)

birds exhibit greater racial differences than are found in these geese.

They range in size from the tiny dark-colored cackling Canada goose of the Pacific Coast to the pale-colored giant Canada goose of the northeastern prairies. While the "cackler" averages only 3 pounds in weight, or about the size of a large mallard duck, the giant "honker" may reach 18 or more pounds in weight, the weight of a whistling swan.

Waterfowl biologists now recognize 11 North American subspecies or races of the Canada goose, although it is doubtful that everyone will ever agree on a standard set of names for thses. All are, however, characterized by the black neck and head and prominant cheek patch. This is the silhouette on signs of the national wildlife refuges all over the United States.

Among the subspecies there appears a gradual change in size and color from north to south. The small, short-billed, short-necked geese nest on the most northern reaches of the Arctic tundra, with the birds becoming progressively larger in the forested and prairie regions to the south. The darkest races are found breeding in the most northwesterly portions of the continent with the lighter forms in interior and northeastern North America. Birds of the centeral Arctic are intermediate in size and color.

The principal subspecies of Canada goose using Agassiz Refuge in the fall is the Todd's or Interior Canada goose (Branta canadensis interior). These birds are decoyed to the area by the resident flock of giant Canada geese (Branta canadensis maxima). Lesser numbers of the smaller Richardson's Canada goose (Branta candensis hutchinsi) and lesser Canada goose (Branta canadensis parvipes) may also be present. The latter two subspecies look much alike and are commonly referred to as "cacklers" by hunters in this area with the term "honker" being reserved for the larger geese. Actually the real cackling goose is a distinct subspecies which breeds along the Bering Seas in Alaska and winters in California.

Todd's Canada goose nests in a wide zone of muskeg around Hudson Bay, from the 60th parallel on the west side, south through Manitoba and Ontario across James Bay, through Quebec and to Hudson Strait north to southern Baffin Island. These geese are medium colored with the males weighing 6-11 pounds, and the females 6-9 pounds.

Waterfowl biologists have found that this Hudson-James Bay Canada goose complex can be divided into four major units delimited by breeding range, migration routes, and wintering range. The breeding grounds of the two most familiar of these units - the Mississippi Valley and the Eastern Prairies populations - merge in the muskeg area between

(more)

Fort Severn, Ontario, and Fort York, Manitoba.

The Mississippi Valley population breeds along the southern shores of Hudson Bay and the western shore of James Bay. These birds migrate south over Ontario, around both sides and over the Great Lakes from Minnesota and Wisconsin, east to Ohio. They stop in large numbers at the Horicon and Necedah National Wildlife Refuges in Wisconsin before continuing south to refuges in southern Illinois to winter.

The nesting range of the Eastern Prairie population extends along the Hudson Bay coast from the mouth of the Severn River in Ontario to Churchill, Manitoba. Considerable nesting also occurs over a 100,000 square mile range 100 hundred miles or more to the southwest of the coast. Birds from this population migrate down through western Ontario and the interlake region of Manitoba into the eastern Dakotas and western Minnesota. They eventually congregate in large numbers at the Swan Lake National Wildlife Refuge in northcentral Missouri.

For a considerable number of these birds, Agassiz National Wildlife Refuge and several state managed refuges offer attractive resting and feeding areas along the northern portions of their migration route. Here many of them may linger through late September and early October before pushing south before the storms of late autumn.

Although it is difficult to determine the size of Eastern Prairie population, numbers of up to 130 thousand have been recorded at the Swan Lake Refuge in the fall. Many of these now winter at the Missouri refuge while others move further south to northeastern Arkansas and along the Gulf Coast in southwetern Louisiana and southeastern Texas.

The Todd's or Interior Canada goose is the one most likely to appear in the hunter's bag in the vicinity of Agassiz Refuge each fall. However, it is a real prize when a local goose hunter is lucky enough to bag a giant Canada goose. These large geese are members of a race once thought to be extinct, but which have now been re-established on much of their former breeding range. They reach maximum size for the species, are heavier proportioned than other Canada geese, and possess relatively elongated bodies, long necks, large broad bills, and light colored plumage. In captivity they have been known to reach weights exceeding 20 pounds, but in the wild weights generally range from 10 to 18 pounds. Approximately 500 of these large geese are present on the refuge this year.

The much smaller Richardson's and lesser Canada geese migrate through this area from widely scattered breeding areas along the Arctic coast, and on islands of the eastern Arctic. They may range in weight from 3 to 8 pounds. The main wintering areas of these geese are in Oklahoma, Texas and Mexico.

There are few phenomena in Nature that quicken man's pulse more than the call of honkers passing high overhead in a stormy fall sky. Wary and keen of eye they offer the true sportsman a real challenge afield.

The Canada goose is in a somewhat more favorable position in its relationship to man and his distructive processes that are many other forms of wildlife. The remoteness of the birds nesting range still protects them from the harassments of civilization. Since migration and wintering habitat is now considered adequate, the future of this magnificent bird will depend primarily on how well we safeguard the Arctic areas.

For those who may desire to learn more concerning the Canada goose we would suggest reading "Honkers Large and Small" in the book entitled Waterfowl Tomorrow produced by the U. S. Department of the Interior and available at most public libraries.

Migrating ducks and geese make extensive use of our National Wildlife Refuges each year. That these wildlife sanctuaries contribute significantly to local hunting opportunities is proven by the fact that 84 percent of all Swan Lake Refuge band recoveries in the United States came from the vicinity of refuges.

DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service Regional Information

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BUREAU OF SPORT FISHERIES AND WILDLIFE
AGASSIZ NATIONAL WILDLIFE REFUGE
MIDDLE RIVER, MINNESOTA

For Release to PM's of October 4, 1967

AGASSIZ NATIONAL WILDLIFE REFUGE PAYS MARSHALL COUNTY, $11,336.23

U.S. Fish & Wildlife Service, Bureau of Sport Fisheries & Wildlife are at this time making distribution of payments to counties in which National Wildlife Refuges are located. Marvin Lee, Administrative Assistant for Agassiz Refuge, reported that $11,386.23, was delivered to Marshall County Commissioners on Oct. 3, 1967.

This is the second year that payments have been based on either 25% of net refuge receipts, or 3/4 of 1% of adjusted cost of acquired lands, as provided for in the Refuge Revenue Sharing Act, P.L. 88-523.

The law provides for a formula to determine payments to counties. It requires annual payment of 25% of the net receipts from reserved public domain lands to the counties in which such bureau lands are located. Counties containing lands acquired in fee by the bureau will receive three-fourths of one per cent of the current value of these areas annually or 25 per cent of the net receipts collected by the bureau from such lands, whichever is the greater.

(More)

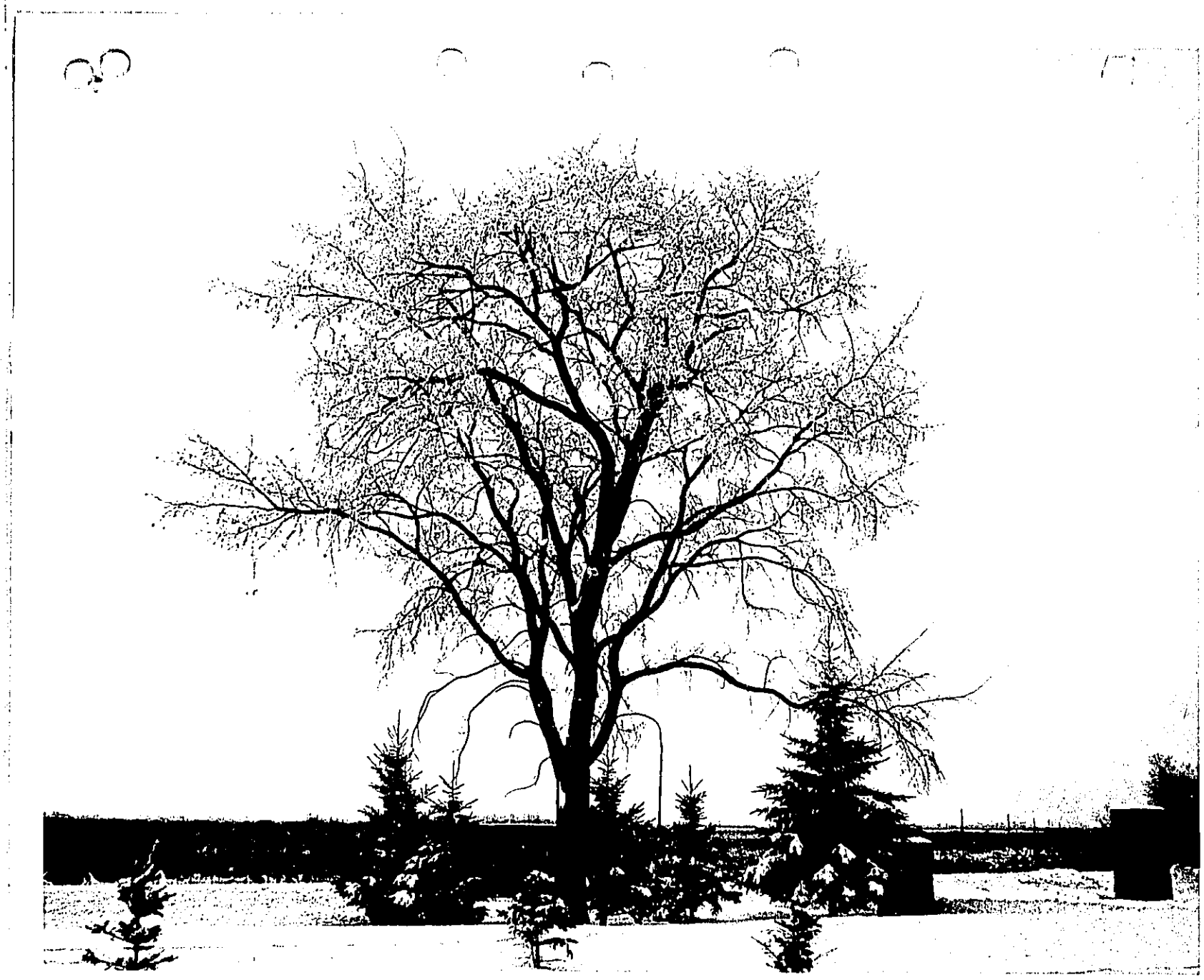
The three-fourths of one per cent formula is applied to the current value of the land not to the assessed value, which is generally considerably less. The current value of refuge lands will be adjusted by the Secretary of the Interior at five-year intervals to reflect changes in land prices.

The law requires that these funds are to be expended by the county for the benefit of both public schools and roads in the county. It further stipulates that before this money can be made available, the county must make assurance to comply with title VI of the Civil Rights Act of 1964.

Payment this year, for fiscal year 1967, is the same as last year, or for fiscal year 1966. It is however, 18 times more than the amount paid in fiscal year 1965, when the old formula for 25% of net receipts only applied.

Frequently the glitter of hoar frost on headquarters trees and shrubs enhanced the beauty of cold winter mornings.

Ag. 470-4, 12/66, M.HLee



Great blue herons are summer residents and inhabit an active rookery on the refuge. This individual appears to be suspicious of cameraman's blind.

Ag. 504-14, 5/67, M.H.Lee

Upon their arrival in late March, the refuge goose flock found most of the pools to be ice covered with few open water areas available.

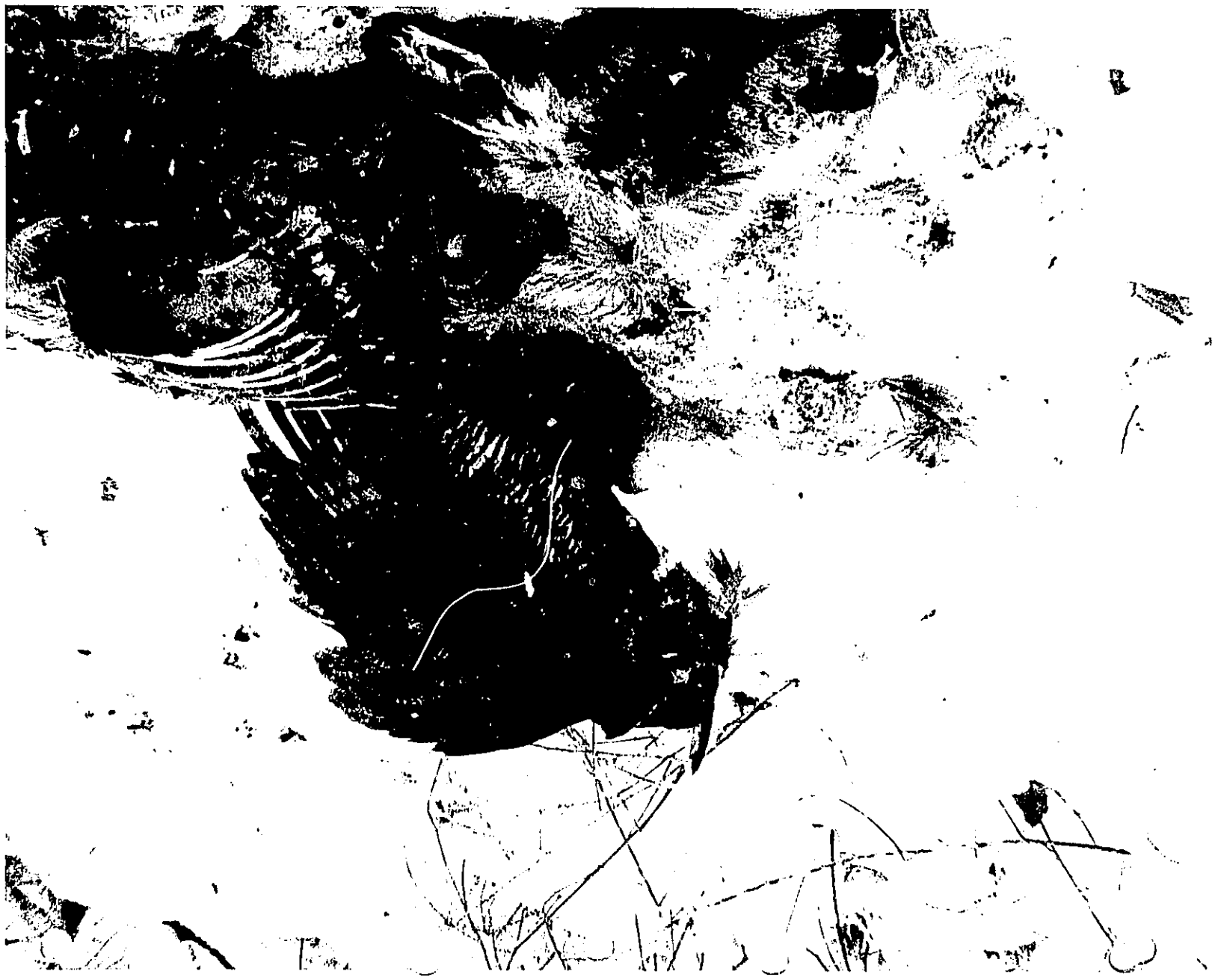
Ag. 492-8, 4/67, M.H.Lee

This eight by eight foot pole platform was constructed in the cormorant nesting area last spring. Five nests, one in each corner and one in the center, were established and hatched.

Ag. 545-14, 7/67, M.H.Lee

The rigors of winter undoubtably influenced the diurnal feeding habits of this great-horned owl. The bird was observed several times feeding on the deer carcass.

Ag. 488-20A 3/67, M.H.Lee



The refuge deer herd appears to be in healthy condition as the large number of fawns sighted throughout the summer and the high percentage of fawns in the refuge harvest indicate. This fawn was only one or two days old when photographed.

Ag. 537-12, 6/67, M.H.Lee

This is
2nd Place Winner of
1967 Photo Contest
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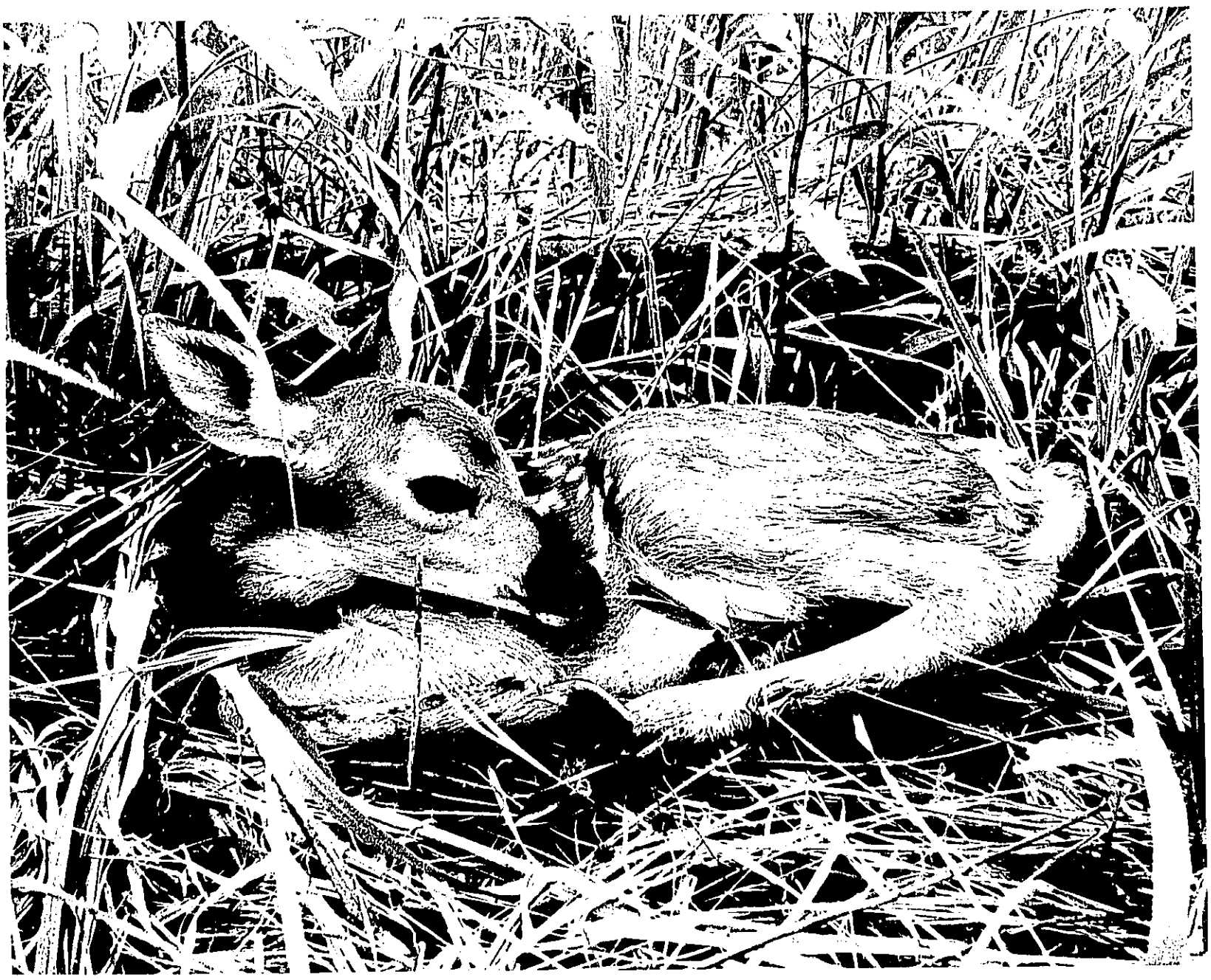
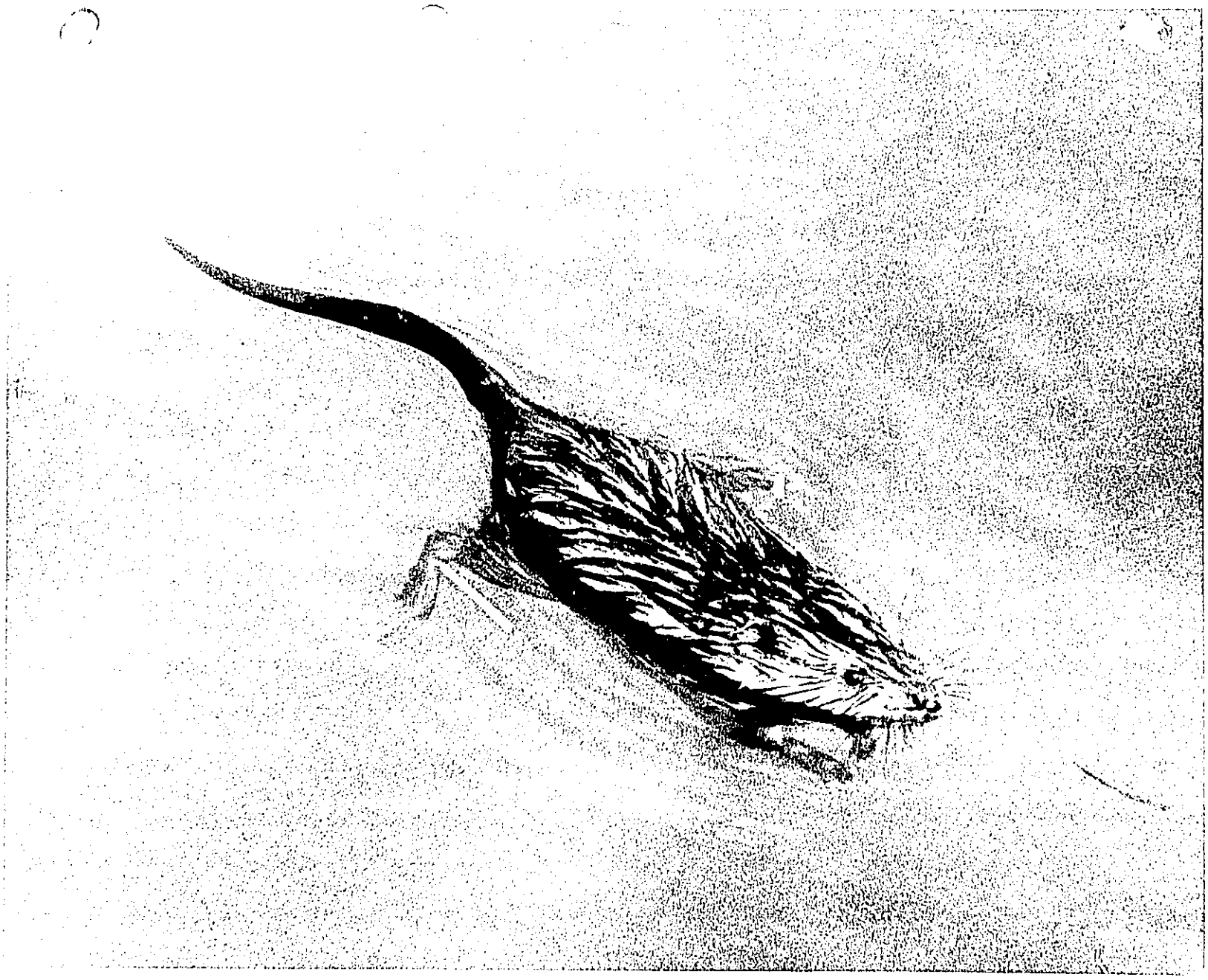


For the past three years major refuge impoundments have been dewatered during late fall in anticipation of spring floodwaters. This has caused a rapid decline in the muskrat population. Present numbers are at a five-year low.

Ag. 566-26, 9/67, M.H.Lee

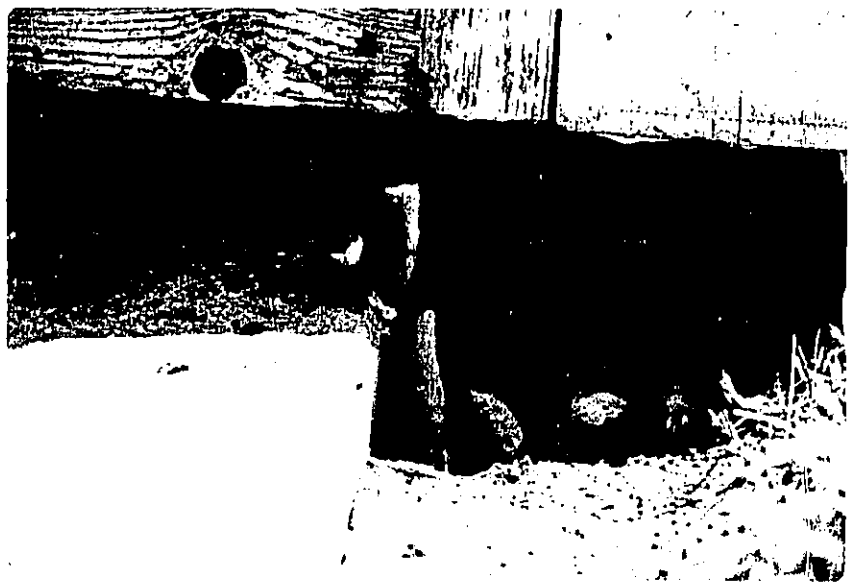


Winter dewatering also adversely affects the refuge beaver colonies. This individual was forced to come out in search of food as its food cache was frozen-in.

Ag. 481-13, M.H.Lee

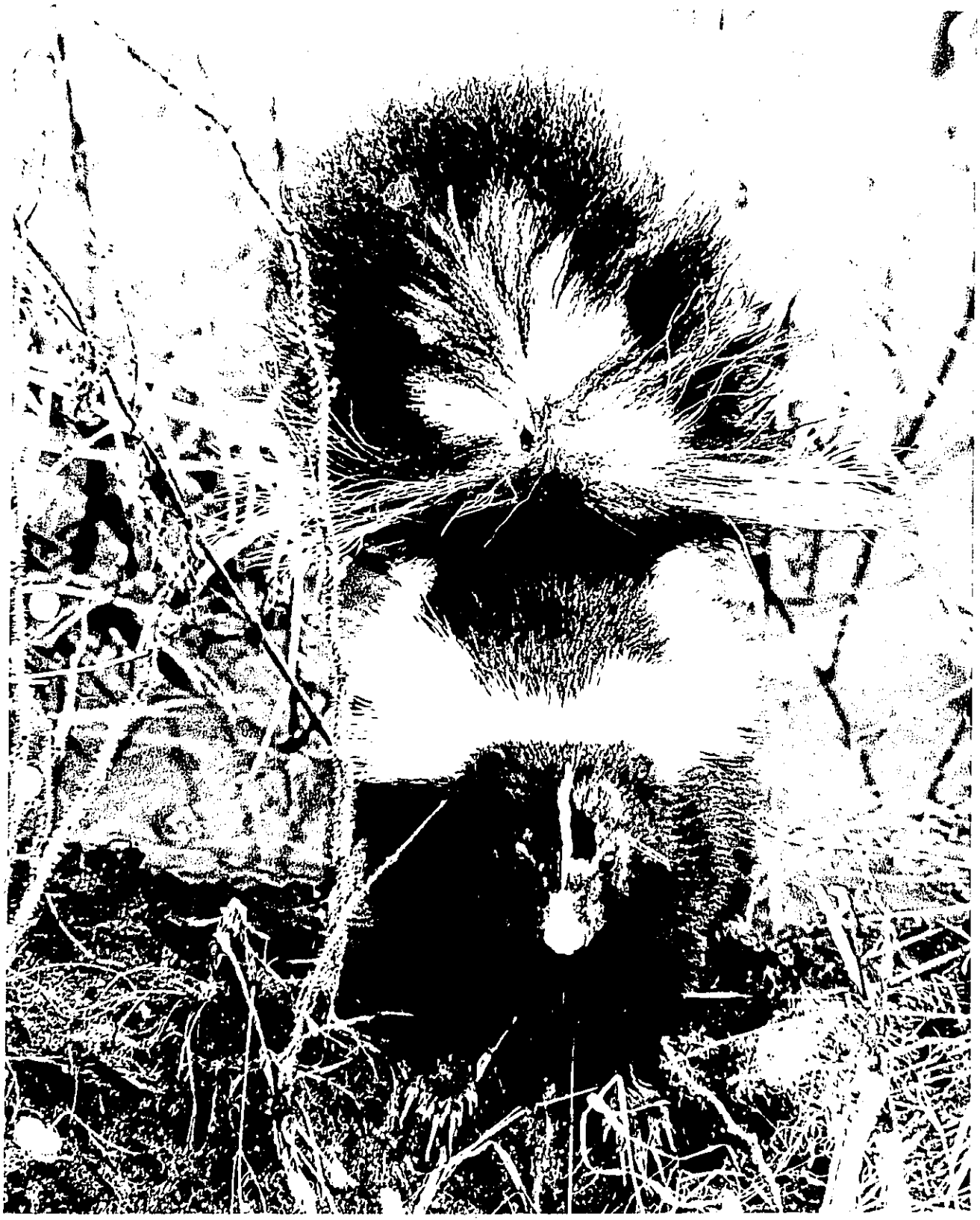
Female short-tailed weasel used a hole under the office sidewalk for her denning site.

However, she was later observed moving her young to the nearby headquarters woodlot.



The striped skunk is one of the most destructive nest predators at Agassiz. Spring floodwaters caused many puddle ducks to nest on dikes and spoil banks which are readily accessible to these predators.

Ag. 503-14, 4/67, M.H.Lee



These immature red-tailed hawks present a fierce rebuff to the intruder near their nest. This species commonly nests on the refuge.

Ag. 546-38, 7/67, M.H.Lee

Black & White pic. of these same birds won the 1967 1st place in photo contest.

These immature red-tailed hawk nests were also observed this summer.

This young broad-winged hawk seems to be daring the photographer to come "just a little bit closer". As was the case in red-tailed hawk nests observed, frog remains were prevalent in this nest.

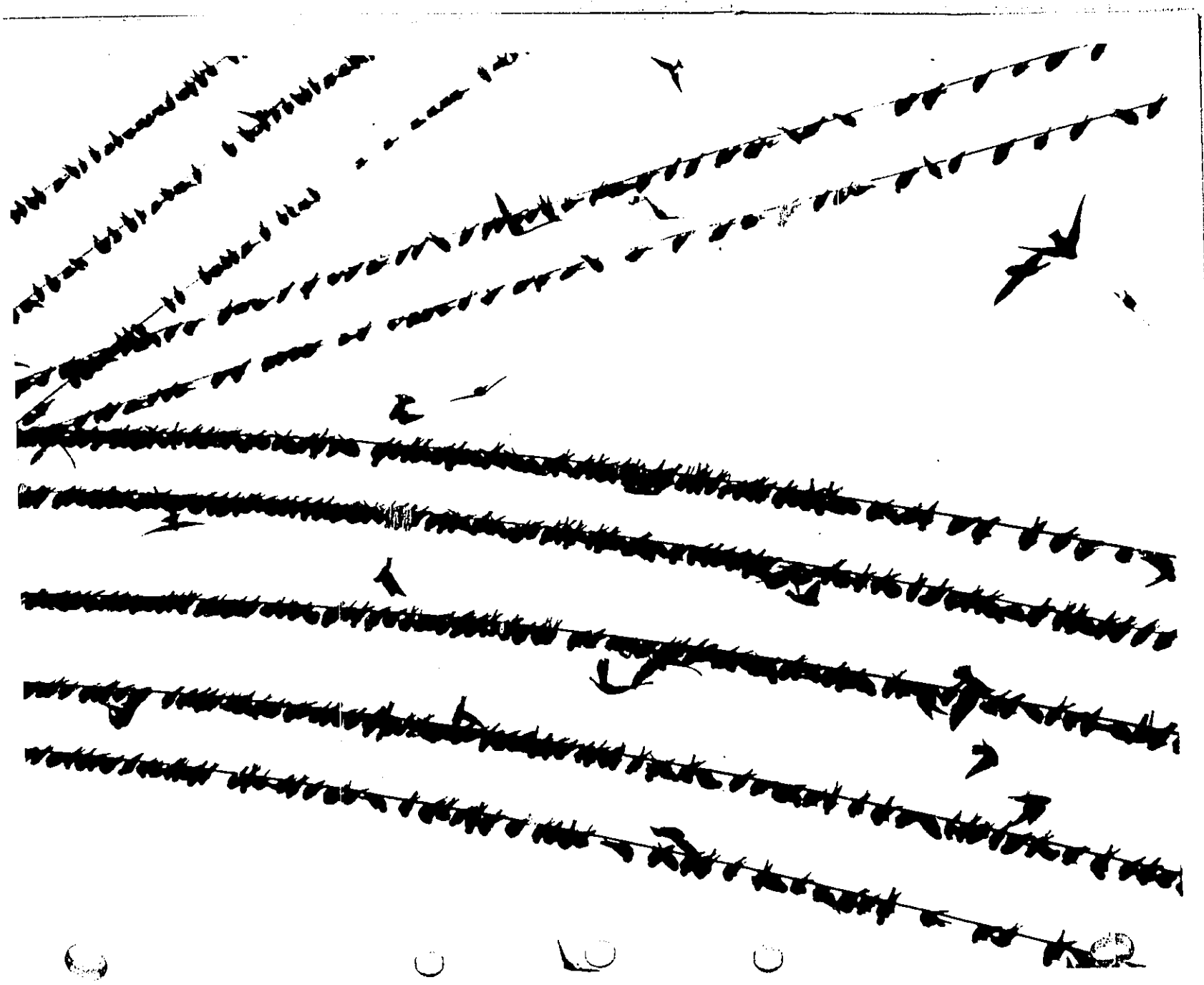
Ag. 548-26, 7/67, M.H.Lee

The great-hornod owl is a common resident on the refuge throughout the year. While this photo was being taken one of the parent birds sat in a nearby tree snapping its beak.

Ag. 510-3, 5/67, M.H.Lee

A pre-migrational buildup of cliff and tree swallows occurs annually when hundreds of the birds congregate in the headquarters area.

Ag. 561-37, 8/67, M.H.Lee



The black-capped chickadee is a common winter visitor at headquarters bird feeders.

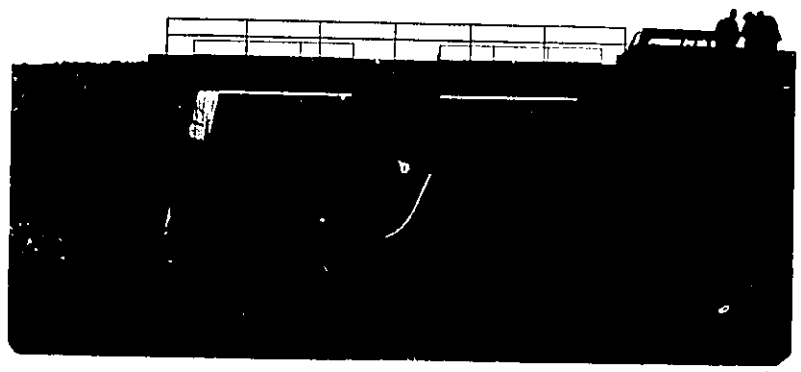
Ag. 487-10, 3/67, M.H.Lee

Black-crowned night herons found a readily accessible food supply when minnows congregated below refuge control structures during their spring spawning run. Several other species of birds were also attracted to these areas.

Ag. 521-6, 6/67, M.H.Lee

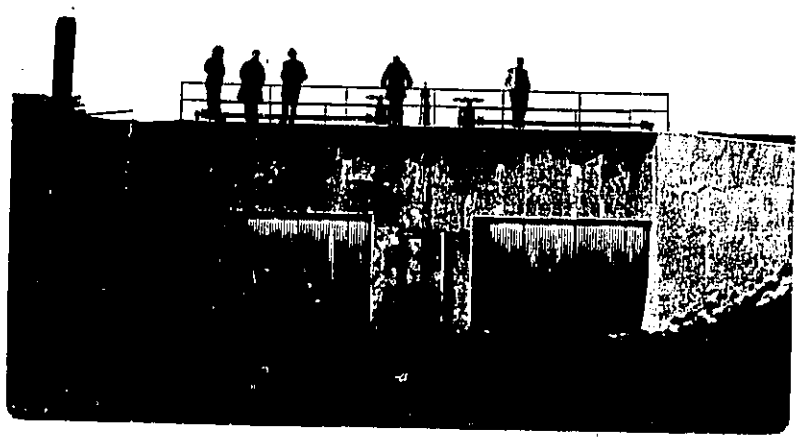
This yearling cow moose was found in a semi-paralized condition along West Gate Road in July. An autopsy revealed an internal rupture as the probable cause of death.

Ag. 540-16, 7/67, M.H.Lee



(Down stream view)

This control structure was built at the Ditch #11 outlet from Agassiz Pool this summer. Its capacity of 6,000 cfs is approximately 15 times greater than the capacity of the old Ditch #11 structure.



(Up stream view)

Spring flooding annually causes erosion damage to impoundment dikes. Although this section of the Narrow Dike was extensively eroded, overall flood damage to refuge dikes was less severe in 1967 than in previous years.

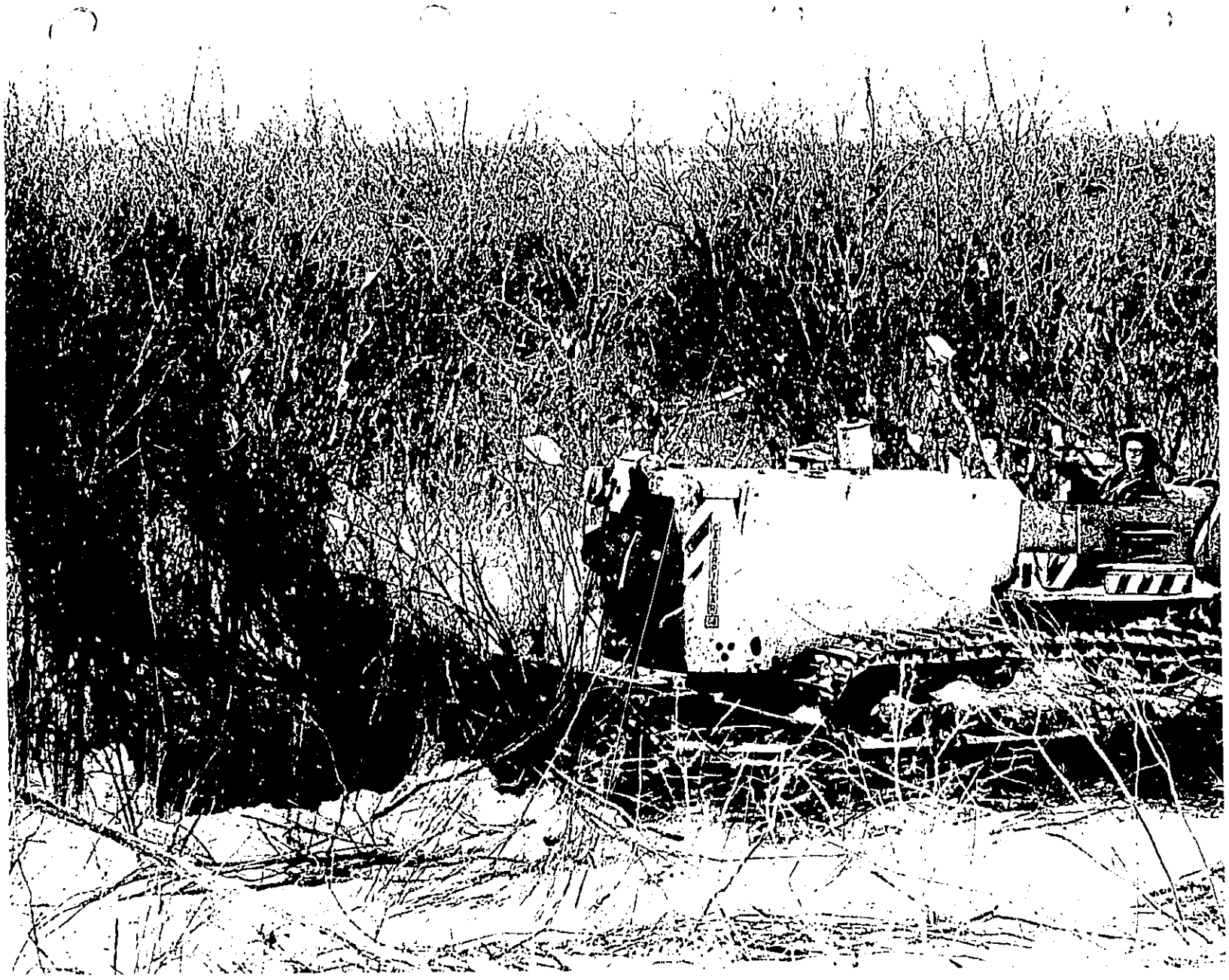
Ag. 549-9, 7/67, J.R.Bellinger

Refuge farmfields were extensively utilized by field feeding waterfowl. A total of 220 acres of small grains and 44 acres of winter wheat browse were available on refuge fields this fall.

Ag. 567-3, 9/67, M.HLee

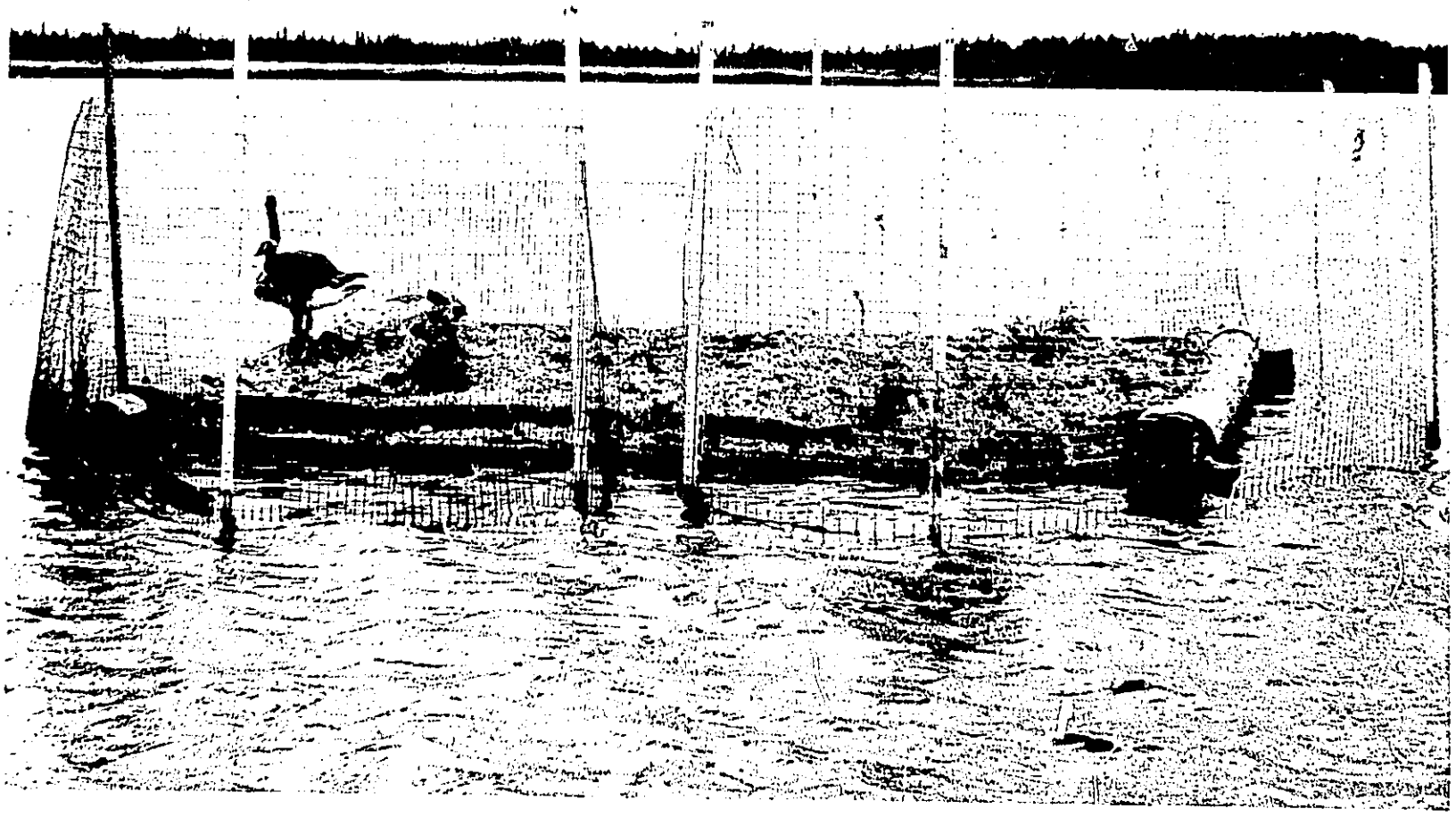
A D-8 caterpillar was used to knock down mature stands of brush. The succulent new growth provides excellent deer and moose browse in these dozed areas.

Ag. 474-5, 1/67, M.H.Lee



This trap, constructed around an artificial goose nesting island in Webster Pool, proved to be highly effective in capturing Canada geese.

Ag. 564-6, 8/67, J.R.Bellinger



The refuge goose flock not only provides added hunting opportunities on surrounding lands but also enables the public to observe the giant Canada goose in its natural environment.

Ag. 528-4, 6/67, M.H.Lee

Approximately 4,000 individuals viewed this refuge display at the Marshall County Fair.

Ag. 552-41, 7/67, D.R.Cline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